CHAPTER 3
MINNESOTA

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CHAPTER 3
MINNESOTA

The following discusses the existing conditions and potential impacts that could be anticipated to occur along the existing Dakota, Minnesota, and Eastern Railroad Corporation (DM&E) rail line under the No-Action Alternative (project denial), the various Action Alternatives proposed to extend DM&E's existing rail line into the Powder River Basin (PRB), and proposed new constructions in Minnesota. The existing conditions in Minnesota for both the existing DM&E rail line and proposed alternative alignments for new construction, are described in Section 3.1. The impacts, both construction and operation, associated with reconstructing the existing system are presented in Section 3.2. Impacts associated with the construction and operation of proposed bypasses are discussed in Section 3.3. The impacts from construction and operation of a connecting track at Owatonna are presented in Section 3.4. Impacts from construction and operation of new rail yards are presented in Section 3.5. Volume 5 contains detailed maps of the rail line and proposed new construction.

3.1 MINNESOTA - EXISTING CONDITIONS

The proposed project area in Minnesota consists of the counties through which the existing DM&E rail line passes. These counties include, from east to west, Winona, Olmsted, Dodge, Steele, Waseca, Blue Earth, Brown, Redwood, Lyon, and Lincoln. These ten counties lie in the southern quarter of Minnesota, south of the Minnesota River. The following discussion is intended to provide a general discussion of the environmental setting and resources found within these counties along the existing DM&E rail line.

3.1.1 CLIMATE

The climate is essentially uniform over the entire project area (see Table 3.1-1). However, differences in vegetation, soil composition, and relief can cause variations in the micro-climate. In this region, spring and fall are transitional periods with fewer extremes than in winter and summer. The normal annual temperature range is between 42°F and 44°F in southern Minnesota. Winters are cold and summers are mild. Average winter temperatures in the project area can range from 15-18°F, while average summer temperatures can range from 70-71°F. Annual precipitation ranges from 24 to 32 inches in southern Minnesota, with the most precipitation in southeastern Minnesota and less precipitation in southwestern Minnesota. Of the average annual precipitation in the project area, 70-75 percent usually falls during the growing season; May to September. Table 3.1-1 summarizes climatic conditions for the counties in the project area.

Table 3.1-1
Summary of County Climatic Conditions

County	Coldest Month/Average Daily Maximum Temperature (degrees Fahrenheit)	Warmest Month/ Average Daily Maximum Temperature (degrees Fahrenheit)	Average Annual Precipitation (inches)	Average Snowfall (inches)	Wettest/Driest Month
Winona	January/23.4	July/84.5	32.71	47.7	June/February
Olmsted	January/21.9	July/80.7	27.8	41	June/February
Dodge	January/21	July/80	28.44	42.4	June/February
Steele	January/24	July/85	28.2	Variable	June/January
Waseca	January/23.8	July/85.1	28.05	39.5	June/January
Blue Earth	January/24.0	July/84.6	29.55	37	June/January
Brown	January/22.3	July/85.5	28.6	43.3	June/January
Redwood	January/21.9	July/84.1	25	38	June/January
Lyon	January/22.1	July/85.6	24.33	38.3	June/January
Lincoln	January/23	July/86	24.5	34	June/January

USDA NRCS Soil Surveys

3.1.2 TOPOGRAPHY

When the existing DM&E rail line was constructed across Minnesota, alterations in the topography immediately adjacent to the rail line were necessary. Low areas and valleys were filled, hills and high points were cut-through in order to provide a rail bed grade suitable for train operations. These cut and fill activities likely altered local drainage patterns, and in some cases, streams may have been channelized or realigned to accommodate the rail line. Most of the changes took place over 100 years ago. Drainage patterns and topographic conditions have reestablished along the existing rail line, with the rail bed providing a significant influence on drainage patterns. The following descriptions cover the general topographical (land surface) setting in the vicinity of the existing railroad.

Winona County

Topography of this county consists of high narrow ridges, steep slopes (greater than nine percent), and lower lying dissected plains. Very steep to steep slopes occur in drainage areas adjacent to the Mississippi River and its tributaries (Lueth 1994).

Olmsted, Dodge, Steele and Waseca Counties

Topography of these counties is gently sloping and rolling glacial terrain with many depressions. However, steep slopes occur in drainage areas adjacent to major rivers (South Fork Whitewater, Zumbro, and Straight) and their tributaries (Cummins 1973, Poch 1980).

Blue Earth County

Topography of this county is nearly level to gently sloping glacial terrain with many small depressions. Steep slopes occur in drainage areas adjacent to the Minnesota River and its tributaries which include the Le Sueur, Cobb, Blue Earth, and Watonwan rivers (Paulson 1978).

Brown and Redwood Counties

Topography of these counties is nearly level to gently sloping terrain with many small depressions. Drainages of major rivers and tributaries have adjacent steep slopes. Major tributaries include the Redwood, Cottonwood, Little Cottonwood, and Minnesota Rivers (U.S.D.A. Soil Service, Soil Surveys).

Lyon and Lincoln Counties

Topography of these counties is nearly level to gently sloping terrain with many small depressions. Steep slopes occur in drainage areas adjacent to major rivers and tributaries (Christensen 1988, Hokanson 1970, Jackson 1994, Redwood County 1996). The Cottonwood and Redwood rivers are tributaries to the Minnesota River.

The project area is drained by two major river basins, the Lower Mississippi River Basin in the southeast part of the state and the Minnesota River Basin in the south-central part of the state. The Mississippi River drains south along the eastern boundary of the project area. The Minnesota River drains south-southeast through the project area west of Mankato. At Mankato, the river turns north and flows out of the project area, eventually joining the Mississippi.

Other rivers in the area are tributaries of either the Mississippi or Minnesota rivers. The Zumbro River flows north to the Mississippi River. The South Fork of the Whitewater River flows east and north and the Straight River flows north, both joining with other rivers before entering the Mississippi River. The Cobb and Maple rivers flow north, joining to form the Le Sueur River, which then continues north, joining with the north-flowing Blue Earth River which empties into the Minnesota River. The Watonwan River also flows north through the project area, joining with the Blue Earth River.

The Cottonwood and Little Cottonwood Rivers flow east through the project area, joining with the Minnesota River. The Redwood River flows east and north through the area also joining with the Minnesota River.

3.1.3 GEOLOGY AND SOILS

Table 3.1-2 provides a summary of the geology of the counties included in the project area.

Table 3.1-2
Minnesota Geology along DM&E Railroad

County	Description
Winona	Surface geology is primarily glacial deposits varying in depth from several feet to over 350 feet. Bedrock geology in most of Winona County is generally Ordovician (425 - 500 million years (m.y.)) carbonate rocks with lesser amounts of sandstone, silts tone and shale. In drainage areas surrounding tributaries and floodplains of the Mississippi River, the Ordovician rocks have been eroded and Cambrian (500 - 570 m.y.) rocks exposed. Cambrian rocks are dominantly sandstone and siltstone with lesser amounts of carbonates (Morey et al. 1982).
Olmsted, Dodge, Steele and Waseca	Surface geology consists of glacial deposits varying in depth from several feet to over 400 feet. Ordovician carbonate rocks with lesser amounts of sandstone, siltstone and shale dominate the bedrock geology of this region.
Blue Earth	Surface geology is primarily glacial deposits varying in depth from several feet to over 400 feet. Bedrock geology in eastern Blue Earth County is primarily Ordovician carbonate rocks with lesser amounts of sandstone, siltstone and shale. In western regions of this county, Cambrian sandstone and silts tone with lesser amounts of carbonates are dominant.
Brown	Surface geology is primarily glacial till varying in depth from a few feet to up to 200 feet. Precambrian metamorphic soils of sandstone, granite and Sioux quartzite.

Table 3.1-2 Minnesota Geology along DM&E Railroad	
County	**Description**
Redwood	Surface geology is largely New Ulm Till, which contains many shale fragments. In some areas the bedrock is exposed at the surface. The soils on the flood plains and terraces formed from alluvium that was deposited by the Minnesota River. Minor outcrops of granite (2,600 m.y.) and gneiss (2,750 m.y.) are present in areas of Redwood County.
Lyon and Lincoln	Surface geology is primarily glacial deposits varying in depth from several feet to over 400 feet. Bedrock geology of this region is generally Cretaceous (65 - 140 m.y.) dark-colored marine shale overlying white to brown sandstone and shale of terrestrial origin (deposited on land without the action of water).
Morey et al. 1982	

3.1.3.1 Unique Geological Formations

There are no unique geological formations located within the proposed project area. Unique geological formations within Minnesota include Sugar Loaf Bluff, located approximately 7 miles north of I-90 and Witoka, and Mount. La Grange/Barn Bluff, located approximately 40 miles north of Rochester, near Red Wing. Other unique features include kettle lakes and moraines formed by glaciation such as those that are present in the Boundary Waters area of northern Minnesota.

3.1.3.2 Soil Types and Characteristics

Table 3.1-3 shows the soil associations along DM&E's existing rail line in Minnesota. The table is followed by specific soil information by county.

Winona, Olmsted, Dodge and Steele Counties

Soils in this region have formed in loess (wind blown, silty material) and underlying glacial till (material deposited by glaciers). Favorable climatic conditions have allowed for the development of fertile and productive soils.

Waseca, Blue Earth, Brown, Redwood, Lyon and Lincoln Counties

Soils in this region have formed mainly in medium textured to fine textured glacial till and are dominated by entisols and mollisols. Entisols are soils found on steep slopes and alluvial (river) basins. They range from shallow to deep, occurring in areas ranging from nearly level to very steep. They are well-drained and have a clayey to sandy loam texture. Low strength, shrink-swell characteristics, and reaction to frost are concerns with this type of soil. Mollisols occur on uplands that range from nearly level to strongly sloping. They are deep and well-drained soils with a sandy loam texture. Frost action is the primary concern for mollisols.

Topography of these counties is relatively flat and soil production is exceptional. Soils with a large accumulation of organic matter occupy approximately 90 percent of this region.

Table 3.1-3
Minnesota Soil Associations along Existing DM&E Railroad

County	Association	Description
Winona	Mt. Carrol-Port Byron-Lindstrom	Very deep, nearly level to steep, well-drained and moderately well-drained soils; on uplands. Concerns: Water erosion
	Seaton-New Glarus-Palsgrove	Moderately deep to very deep, nearly level to very steep, well-drained soils; on uplands. Concerns: Water erosion
	Waukee-Rockton-Racine	Moderately deep to very deep, nearly level to sloping, well-drained and moderately well-drained soils; on uplands and terraces. Concerns: Drought and water erosion
	Lacrescent-Lamoille	Deep and very deep, steep and very steep, well-drained soils; on uplands. Concerns: Water erosion
	Seaton-Newalbin-Festina	Very deep, nearly level to very steep, poorly-drained, very poorly-drained, moderately well-drained and well drained soils; on flood plains. Concerns: Water erosion, flooding and wetness
Olmsted	Racine-Floyd-Maxfield	Nearly level and gently to moderately steep, well-drained to poorly-drained silty soils; on uplands and in upland drainage ways. Concerns: Controlling erosion on agriculture lands on the moderately to steep Racine soils and internal drainage in the wetter Floyd and Maxfield soils
	Timula-Port-Byron	Nearly level to very steep, well-drained silty soils; on uplands. Concerns: Management of erosion in the steeper areas of agriculture fields and building site development

Table 3.1-3
Minnesota Soil Associations along Existing DM&E Railroad

County	Association	Description
Olmsted *(continued)*	Mt. Carroll-Marlean-Arenzville	Nearly level to very steep, well-drained and moderately well-drained silty soils; on uplands and flood plains. Concerns: Management of erosion in the steeper areas of agriculture fields and building site development
	Dickinson-Plainfield-Kalmarville	Nearly level to very steep, well-drained, somewhat excessively-drained, excessively-drained and poorly-drained soils that are loamy and sandy on outwash terraces and silty on flood plains. Concerns: Low available water capacity, severe hazard of soil blowing and low natural fertility on croplands. Frost heave and the seasonal high water table may impact building sites
Dodge	Association data not available	
Steele	Webster-Clarion-Nicollet	Poorly-drained to well-drained, nearly level to rolling, loamy soils. Concerns: Controlling erosion and the height of the water table
	Lester-Webster-Le Sueur	Well-drained to poorly-drained, nearly level to rolling, loamy soils. Concerns: Controlling erosion and the height of the water table.
	Hayden-Webster-Lester	Well-drained and poorly-drained, nearly level to steep, loamy soils. Concerns: Controlling erosion and the height of the water table
	Bixby-Dakota-Biscay-Esterville	Poorly-drained to somewhat excessively-drained, nearly level, loamy soils. Concerns: Managing for adequate drainage where needed and control of soil blowing

Table 3.1-3
Minnesota Soil Associations along Existing DM&E Railroad

County	Association	Description
Waseca	Lester-Kilkenny-Le Sueur-Cordova	Gently undulating to rolling soils on low, nearly circular hills that have smooth sides and nearly level tops. Concerns: Wetness, may require drainage
	Clarion-Nicollet-Webster	Gently undulating to rolling soils on short, convex and concave slopes; and soils on low knolls and on low, nearly circular hills. Concerns: Erosion, fertilizing required
	Lester-Le Sueur-Cordova-Webster	Gently undulating to rolling soils on short, convex and concave slopes that rise 15 to 40 feet above the swales; and soils on low knolls and on low, nearly circular hills. Concerns: Erosion, fertilizing required
Blue Earth	Alluvial land-Copaston-Chaska	Nearly level and gently undulating, poorly-drained to well-drained soils formed in medium textured alluvium stratified with moderately coarse and coarse textured material. Concerns: Flooding, contamination of ground water by individual sewage disposal systems and drought.
	Storden-Confrey-Lomax	Nearly level to very steep, well-drained and poorly-drained formed in moderately coarse to moderately fine textured alluvium and medium textured glacial till. Concerns: Erosion
	Minnetonka-Kilkenny-Carson	Nearly level and moderately steep, very poorly-drained, poorly-drained and well-drained soils formed in moderately fine and fine textured material over glacial till or inorganic material. Concerns: Not given
	Kilkenny-Minnetonka-Lerdal	Nearly level to moderately steep, poorly-drained, somewhat poorly-drained and well-drained soils formed in moderately fine and fine textured material over glacial till. Concerns: Water erosion

Table 3.1-3
Minnesota Soil Associations along Existing DM&E Railroad

County	Association	Description
Brown	Canisteo-Ves-Seaforth	Nearly level to moderately steep, poorly-drained, well-drained and moderately well-drained, loamy soils on ground moraines. Concerns: Wet, poorly-drained, high lime content, erosion on slopes
	Webster-Nicollet-Okoboji	Nearly level, poorly-drained, moderately well-drained and very poorly-drained, loamy and silty soils on till plains and ground moraines. Concerns: Seasonal wetness
	Clarion-Storden-Terril	Very steep, well-drained and moderately well-drained, loamy soils on till plains, ground moraines and foot slopes. Concerns: Steep slope, unsuited for crops
	Dickman-Estherville-Lemond	Nearly level and gently sloping, well-drained, moderately well-drained, poorly-drained and very poorly-drained, loamy soils on valley trains and outwash plains. Concerns: Seasonal wetness, wind erosion when dry
Redwood	Association data not available.	
Lyon	Forman-Aastad	Well-drained and moderately well-drained, undulating and nearly level soils that formed in glacial till. Concerns: Soil blowing and wetness
	Barnes-Flom-Buse	Well-drained and poorly-drained, nearly level to moderately steep soils that formed in glacial till. Concerns: Erosion and wetness
	Everly-Letri-Wilmenton	Well-drained, poorly-drained and moderately well-drained, nearly level to rolling soils that formed in glacial till. Concerns: Erosion

Table 3.1-3
Minnesota Soil Associations along Existing DM&E Railroad

County	Association	Description
Lincoln	Barnes-Buse-Flom	Deep, excessively-drained to poorly-drained, nearly level to gently undulating or moderately steep soils formed in loamy glacial till and clayey lacustrine deposits. Concerns: Erosion and wetness
	Singsaas-Oak Lake	Deep, well-drained and moderately well-drained, nearly level and gently undulating soils formed in silty glacial till. Concerns: Wind erosion
	Buse-Barnes	Deep, excessively-drained and well-drained, sloping to steep soils formed in loamy glacial till. Concerns: Erosion
	Kranzburg-Vienna	Deep, well-drained, gently sloping soils formed in windblown silts and glacial till. Concerns: Erosion
	Beotia-Dickey, silty variants	Deep, well-drained or somewhat excessively-drained, nearly level and gently sloping soils formed in silty and sandy materials deposited by wind and water. Concerns: Droughty and wind erosion

Source:
USDA County Soil Surveys

3.1.3.3 Geological Hazards

Karst topography[1] and areas with low to high sinkhole probability are found throughout portions of southeast Minnesota. Sinkholes associated with karst topography are generally formed by the collapse of rock layers overlying caves. The greatest probability for surface collapse exists in areas where sinkholes are concentrated. These surface depressions can result in the damage or destruction of existing surface structures. Some areas adjacent to Rochester are dominated by karst topography. The density of sinkholes in these areas may range from 20 to several hundred sinkholes per square mile. Areas associated with karst topography are not well suited for railroad construction activities.

The United States Geological Survey (USGS) presents seismic data as the level of horizontal shaking that has a 2 percent chance of being exceeded in a 50-year period. Shaking is expressed as a fraction of gravity or g (acceleration of a falling object due to gravity). For example, a shaking level of 0.4 g indicates there is a 2 percent chance of experiencing a shaking force exceeding 0.4 g in a 50-year period. The approximate shaking level that is likely to cause damage to pre-1965 dwellings is 0.1 g (USGS National Seismic Hazard Mapping Project 1996).

In the project area, there is a 2 percent chance that the shaking level will exceed 0.1 g within a 50-year period (USGS Shaking-Hazard 1996). In other words, there is a 2 percent chance that seismic activity within the project area will produce shaking strong enough to cause structural damage to dwellings during a 50-year period.

3.1.3.4 Prime Farmland

Prime farmland is important in meeting the nation's needs for food and fiber. Because prime farmland is limited, the U.S. Department of Agriculture recognizes the importance of wisely using this resource. Prime farmland is defined by the U.S. Department of Agriculture as land that is best suited for food, feed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land. Prime farmland produces the highest yields with minimal inputs of

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[1] Karst is a term applied to topography common in areas with carbonate rocks (including limestone and dolomite) and evaporites (including gypsum and halite) characterized by caves, sinkholes, and lack of surface streams. The most common minerals in carbonate rocks include calcite, $CaCO_3$, and dolomite, $CaMg(CO_3)_2$. For extensive development of karst, the rock must consist of a minimum of 90 percent calcite. It has been shown that karst will not develop in carbonate rocks that are less than 60 percent calcite. Karst is formed by calcite being dissolved by moving groundwater. As surface water infiltrates into the ground, carbon dioxide from the air and from biological activity in the soil dissolves in the water. The water, H_2O, and carbon dioxide, CO_2, form carbonic acid, H_2CO_3, a weak acid which slowly reacts with calcite, causing it to dissolve. (Renton, John J. Physical Geology. Minneapolis: West Publishing Co., 1994.)

energy and economic resources. Developed areas and land that is not available for crop production are not considered prime farmland.

The total acreage of each county that meets prime farmland requirements varies greatly (Table 3.1-4). For instance, of the total acreage in Winona County, approximately 30 percent meets soil requirements for prime farmland; while the percentage of prime farmland in Dodge County is approximately 92 percent.

Table 3.1-4
Prime Farmland

County	Prime Farmland (Acres)	Approximate County Percentage of Prime Farmland Acreage
Winona	115,100	30
Olmsted	211,100	59
Dodge	212,200	92
Steele	171,900	78
Waseca	160,900	67
Blue Earth	304,100	60
Brown	314,800	82
Redwood	418,400	88
Lyon	341,600	80
Lincoln	226,200	76

NRCS Soil Surveys, Minnesota

3.1.3.5 Paleontological Resources

Most of Minnesota is covered by a thin layer of glacial gravel (ground moraine) from the most recent Ice Age. Glaciers advanced and retreated over this region several times during the last two million years, leaving rich but complex glacial deposits. Fossil remains are occasionally found in these gravels during excavation, the most common being the large molars of mammoths (*Mammuthus* spp.) and mastodons (*Mammut americanum*).

Glacial meltwater formed many temporary lakes throughout Minnesota. Lake sediments may contain fossil remains of fishes, frogs, and turtles.

Below the glacial cover is bedrock of Cretaceous age (100-65 m.y.) that contains abundant fossils of extinct sea creatures such as mosasaurs, plesiosaurs, giant fishes, ammonoids, and large clams. Between the bedrock and glacial deposits are some older river gravels from early in the Ice Age that contain remains of extinct American horses, camels, ground sloths, and other large mammals.

3.1.4 LAND USE

The project area counties are generally rural with few large (population over 20,000) cities. The following discusses the various land uses found along the existing DM&E rail line across southern Minnesota. Distances given below are cumulative for both sides of the rail line as land use may be different on opposite sides of the rail line.

3.1.4.1 Agriculture

Farming is the principal enterprise in the project area. Anywhere from 30-92 percent of each county is farmland. The existing DM&E rail line passes adjacent to approximately 186.0 miles of cropland and over 63.7 miles of pasture land. Corn and soybeans are the primary crops grown, with alfalfa, oats, and wheat being secondary crops. Dairying and the raising of hogs are the main livestock enterprises in the area.

Between 1982 and 1992 the number of acres in farmland decreased in the State of Minnesota in all but one county. Brown County saw a small increase of 2.4 percent (Table 3.1-5). Likewise, the number of farms also decreased in the state and all counties. However, the average size per farm increased. The State of Minnesota saw an increase of 16.3 percent in the average farm size. The average increase in farm size for counties located within the project area was 16 percent.

Table 3.1-5
Agricultural Statistics of Minnesota and Potentially Affected Counties

Affected Area	Acreage in Farmland (1,000) 1982-1992	Change in Number of Farms 1982-1992	Average Size of Farms (acres) 1982-1992
Minnesota	-7.4	-20.5	16.3
Winona	-7.3	-9.1	1.9
Olmsted	-7.3	-17.1	11.6
Dodge	-10.4	-20.7	12.8
Steele	-2.1	-22.8	26.9
Waseca	-4.4	-13.6	11.0
Blue Earth	-7.5	-25.2	24.0
Brown	2.4	-14.4	19.7
Redwood	-3.9	-18.5	18.1
Lyon	-3.2	-19.4	20.2
Lincoln	-4.5	-15.4	13.3

1996 County and City Extra, Annual Metro, City and County Data Book/County and City Data Book, 1988

3.1.4.2 Residential

The existing DM&E rail line is adjacent to approximately 12.0 miles of land classified as residential. This land includes 41 communities (the names and populations are listed in Section 3.1.6). The largest populated areas are the cities of Winona, Rochester, Owatonna, and Mankato. Residential areas are distributed throughout the potentially affected communities and generally have areas with high concentrations of residences. Some residential areas are in close proximity to the existing rail line. Outside of these communities, residences and farms are scattered throughout the rural areas. Some of these rural residences are also in close proximity to the rail line.

3.1.4.3 Business and Industrial

The existing DM&E rail line is adjacent to approximately 42.9 miles of land classified as business or industrial. Some of the major employers throughout the project area include Lucas Body Systems and Winona State University in Winona; Mayo Medical Center, IBM Corporation, Crenlo Inc. and Kahler Corporation in Rochester; Federal Insurance Co., Viracon/Curvlite Inc., Truth Hardware and Spx Corp-OTC Division in Owatonna; Brown Printing Co. in Waseca; Carlson Craft Social, and Carlson Craft Commercial in North Mankato; Mankato State University, and Immanuel-St Joseph's Mayo Health System in Mankato; and Kraft General Foods and 3M Corporation in New Ulm (Minnesota Department of Trade and Economic Development 1996-1997).

Small business and industrial areas occur adjacent to the existing rail line in nearly every community along the rail line. Many of these facilities utilize the rail line to ship and receive material. Industries based on agriculture are particularly common. Grain elevators and farm suppliers ship grain and receive fertilizer and other agricultural goods by rail. Industrial and business facilities are generally located within established communities, but they also occur on the outskirts of these communities or scattered along the more rural portions of the rail line.

3.1.4.4 Minerals and Mining

No coal, oil, gas, or mineral resources are known to exist within this region in Minnesota (Morey 1984, USGS 1996, USGS 1997). Construction materials such as crushed stone, clay and shale are extensively quarried in Winona, Olmsted, and Dodge counties in areas where bedrock is exposed at the surface. The existing rail line is adjacent to approximately 0.3 mile of land classified as strip mining, rock quarries, and gravel pits in Minnesota. Limited quarries are also found in Blue Earth and Brown counties where bedrock is exposed along the Minnesota River (Morey 1998).

3.1.4.5 Public Facilities

There are many public facilities in area communities. Nearly all communities have elementary, middle, and senior high schools. Many of the communities have clinics and/or doctor and dentist offices. Hospitals are found in the major cities (Winona, Rochester, Mankato). Nearly all of the communities have churches. Recreational facilities such as parks are also common throughout the area (parks are discussed in more detail in Section 3.1.16, Recreation). Some of the smaller communities have volunteer fire departments and rely on county sheriffs for public protection services (Minnesota Department of Trade and Economic Development 1996-1997).

One of the world's premiere health facilities is located in the project area. The Mayo Clinic's primary service area is within a 120-mile radius of Rochester, Minnesota. However, a substantial number of patients come from outside this 120-mile radius, including a large number of international patients. Table 3.1-6 summarizes patient visits to the Mayo Clinic.

Table 3.1-6
Mayo Clinic Services

Service	1997	1998
Number of ambulance dispatches	10,701	12,765
Emergency transports in Rochester	3,392	3,632
Total emergency transports	4,007	4,203
Number of outpatient visits	1,130,107	1,137,750
Total number of surgical procedures	45,726	46,215
Number of elective surgical procedures	N/A	N/A
Local vs. Out-of-town patients		
Olmsted County (local)	22 percent	23 percent
SE Minnesota	19 percent	19 percent
Within 120 miles outside MN	18 percent	19 percent
U.S. outside 120 miles	39 percent	37 percent
International	2 percent	2 percent
Emergency room visits	70,054	74,416
Patient registrations	240,386	249,452
Patient-physician visits	1.5 million	1.5 million
Total patients admitted	50,249	51,478

Notes: Outpatient visits includes clinical outpatient visits only.
Total patient-physician visits include both outpatient clinical visits as well as hospital outpatient and hospital inpatient visits.
Number of elective surgical procedures is not available. However, the vast majority of surgeries are not elective.

Mayo Clinic, 1999

Winona State University is located on a 40-acre campus in the center of Winona. It is one of seven state-funded, co-educational universities that make up the Minnesota State University system. Today, the enrollment is approximately 7,300 students representing 30 states and 45 foreign countries.

Mankato State University (MSU) was founded nearly 130 years ago. It is the third largest state educational institution in Minnesota and the second largest employer in Mankato. More than 12,700 students attend MSU. In 1996, the University welcomed 1,534 new freshmen students and 868 transfer students. Nine out of 10 MSU undergraduate students are residents of the State of Minnesota.

A state prison medical facility is located in Rochester, Minnesota. It is situated approximately 600 feet south of the existing DM&E rail line. It is an administrative facility housing inmates of low security risk. In 1996, the facility's population consisted of 235 medical needs patients, 154 mental needs patients, 128 drug treatment patients, and 325 inmates working within the facility.

3.1.4.6 Federal Lands

3.1.4.6.1 Forest Service Lands

No Forest Service Lands occur along DM&E's existing rail line in Minnesota.

3.1.4.6.2 Bureau of Land Management Lands

No Bureau of Land Management Lands occur along DM&E's existing rail line in Minnesota.

3.1.4.6.3 Bureau of Reclamation Lands

No Bureau of Reclamation Lands occur along DM&E's existing rail line in Minnesota.

3.1.4.6.4 Fish and Wildlife Service Lands

Wildlife Refuges

The Upper Mississippi Fish and Wildlife Refuge in Winona County is the only Federal refuge in the project area. It is located approximately one mile east of Minnesota City. The rail line is approximately 2,000 feet west of this refuge. The entire Upper Mississippi Wildlife and

Fish Refuge covers 195,000 acres and stretches 200 miles along the Mississippi River from Wabasha to Rock Island, Illinois. Boating, hunting, and fishing are all allowed in this refuge.

Habitat Easements

Approximately one mile northwest of Eagle Lake, in Blue Earth County, the existing DM&E rail line passes 0.3 mile west of a United States Fish and Wildlife Service (USFWS) habitat easement. Habitat easements are maintained and managed by the USFWS to provide habitat for wildlife, particularly threatened and endangered species and waterfowl.

Wetland Easement

There are no wetland easement areas adjacent to or within the proposed project area.

3.1.4.7 Reservation and Treaty Lands

There are no reservation or treaty lands along DM&E's existing rail line in Minnesota.

3.1.4.8 State Lands

This section discusses the state lands that are in the vicinity of the existing DM&E rail line. These state lands include state wildlife management areas and refuges, state parks, state scientific and natural areas, and state forests.

State Wildlife Management Areas and Wildlife Refuges

The existing rail line passes through or in close proximity (less than 5 miles) to 28 state wildlife areas or refuges (as obtained from Public Recreation Information Map (PRIM). These areas (Table 3.1-7) are managed to provide wildlife habitat, improve wildlife production, and provide public hunting and trapping opportunities.

Table 3.1-7
Wildlife Management Areas and Game Refuges along DM&E's Existing Rail Line in Minnesota

Name	Size	Location	County	Opportunities
East Side State WMA	109 acres	2.5 miles west of Chester; adjacent to rail line for approx. 0.1 mile	Olmsted	hunting hiking
Gordon W. Yeager State WMA	650 acres	just east of Rochester; rail line passes through approx. 1.3 miles of this area	Olmsted	hunting hiking
Rochester State Game Refuge[1]	42,800 acres	surrounds the City of Rochester; rail line passes through 8 miles of this area	Olmsted	hunting
Pheasants Forever State WMA	121 acres	2.5 miles NW of Kasson; rail line passes within 1.5 miles to the south	Dodge	hunting hiking
Claremont State Game Refuge	5,120 acres	just east of Claremont; rail line passes through 3 miles of this area	Dodge	hunting
McMartin State WMA	40 acres	approximately 0.6 mile south of Claremont	Dodge	hunting hiking
Waseca State WMA	251 acres	2.5 miles east of Waseca; rail line is the south border for 0.8 mile	Waseca	hunting hiking
Tom Cliff Jr. Memorial State WMA	33 acres	along the NE side of Clear Lake; rail line passes 1.5 miles south of this WMA	Waseca	hunting hiking
Born State WMA[2]	184 acres	3 miles NW of Janesville; less than 500 ft south of rail line	Blue Earth	hunting hiking
East Minnesota River State Game Refuge	7,500 acres	just north of Mankato; rail line passes through less than one mile of the SW corner of this area	Blue Earth	hunting

Table 3.1-7
Wildlife Management Areas and Game Refuges along DM&E's Existing Rail Line in Minnesota

Name	Size	Location	County	Opportunities
Swan Lake State WMA (North Star Supplement)[2]	1,057 acres	Less than one mile north of Judson and the rail line	Nicollet	hunting hiking
Fritsche Creek State WMA*	372 acres	Just north of New Ulm; North of Minnesota River	Nicollet	hunting hiking
Somsen State WMA	44 acres	3.5 miles NW of New Ulm; less than one mile south of rail line	Brown	hunting hiking
Rosenau-Lambrecht State WMA[2]	150 acres	3.5 miles west of New Ulm; rail line is north border for 0.15 mile of this WMA	Brown	hunting hiking
Romberg State WMA	19 acres	2 miles east of Sleepy Eye; less than 200 ft. south of rail line	Brown	hunting hiking
Boise Lake State WMA	7 acres	4 miles east of Springfield; 1.5 miles SW of the rail line	Brown	hunting hiking
Vogel State WMA	85 acres	3.5 miles SW of Springfield; 1 mile south of rail line	Brown	hunting fishing
Lamberton State WMA	402 acres	3 miles NE of Lamberton; 4,500 ft. north of rail line	Redwood	hunting fishing
Greenhead State WMA	49 acres	1 mile west of Tracy; 3,400 ft. north of rail line	Lyon	hunting
Garvin State WMA	81 acres	1.5 miles NW of Garvin; less than one mile north of the rail line	Lyon	hunting
Yankton State WMA[2]	269 acres	less than 1 mile SE of Balaton; rail line passes through 0.5 mile of this area	Lyon	hunting fishing rest area

Table 3.1-7
Wildlife Management Areas and Game Refuges along DM&E's Existing Rail Line in Minnesota

Name	Size	Location	County	Opportunities
Happy Hollow State WMA	19 acres	1.5 miles NW of Balaton; 0.5 mile NE of rail line	Lyon	hunting
Rock State WMA	90 acres	2.5 miles NW of Balaton; 2,500 ft. north of rail line	Lyon	hunting fishing
Gadwall State WMA	32 acres	1 mile SW of Burchard; 0.6 mile south of rail line	Lyon	hunting
Tyler State WMA	375 acres	just SW of Tyler; less than 200 ft. south of rail line	Lincoln	hunting
Discors State WMA	47 acres	1.5 miles west of Tyler; less than 200 ft. south of rail line	Lincoln	hunting fishing
Hole-in-Mountain State WMA[2]	354 acres	2.5 miles south of Lake Benton; rail line is east border for 0.8 mile of this WMA	Lincoln	hunting
Alton State WMA	550 acres	1 mile SE of Verdi; 1,000 ft south of rail line	Lincoln	hunting

[1] This State Game Refuge is privately owned and was created to ensure hunting rights were not taken away from area residents
[2] Multi-area WMA. Size given is total acreage. Location given is for the closest area.
* Obtained from Department of Natural Resources. Not on PRIM.
Department of Natural Resources. Public Recreation Information Map (PRIM).

State Parks

The existing rail line passes within 1.5 miles of the Rice Lake State Park and within 1.0 mile of the Flandrau State Park. The DM&E rail line passes through Minneopa State Park.

Rice Lake State Park is in Steele County, six miles east of Owatonna. It is approximately 2 miles north of the rail line. The park site was originally vast oak savanna and now contains rare prairie vegetation. This 737-acre park has campgrounds, water access, picnic sites, canoeing, 4 miles of hiking trails, 2 miles of snowmobiling trails, and 4 miles of skiing trails.

Flandrau State Park is located just south of New Ulm in Brown County. The existing DM&E rail line passes less than one mile northeast of this state park. This park is 805 acres and has overnight facilities that are handicapped accessible, 8 miles of hiking trails, 8 miles of cross country ski trails, picnic sites, and shelters. There is also a swimming beach, river fishing, and boat access in the park. There are volleyball and horseshoe courts, playgrounds, a warming house, historic sites, snowshoe and ski rentals, firewood and ice sales, and a gift shop.

Minneopa State Park is located just west of Mankato in Blue Earth County (Figure 3-1). Approximately 2.5 miles of existing DM&E rail line pass through this park. This park is 1,145 acres and has overnight facilities that are handicapped accessible, 4.5 miles of hiking trails, 4 miles of cross country ski trails, picnic sites, and shelters. There is both river and stream fishing with boat access, volleyball and horseshoe courts, a visitors center, interpretive exhibits, historic sites, and a waterfall. Additionally, the Minnesota legislature has approved expansion of the statutory boundary of the park to include an additional 1,485 acres. This land in currently outside the park boundary. However, being within the statutory boundary allows the Minnesota Department of Natural Resources (DNR) to acquire these lands for park expansion should they become available.

State Scientific and Natural Areas

State Natural Areas (SNA) protect rare and endangered species habitat, unique plant communities and significant geologic features that possess exceptional scientific or educational values. These scientific and natural areas are closed to hunting, collecting, and both land and water vehicles, unless otherwise noted.

There are two state scientific and natural areas in the vicinity of the project area. The Hythecker Prairie State Scientific and Natural Area is a 40-acre area, approximately 2 miles southwest of Claremont in Dodge County. Hythecker Prairie State SNA is mesic prairie with hiking trails (Department of Natural Resources 1993a). Cottonwood River Prairie State SNA is located approximately 3.5 miles southwest of Springfield in Brown County. This 125-acre site is less than one mile south of the rail line and contains a hill prairie and wildflower habitat.

State Forests

State forest lands in Minnesota are generally located in the eastern portion of the project area, in Winona County. The existing DM&E rail line passes through approximately 14 miles of the Richard J. Dorer Memorial Hardwood State Forest.

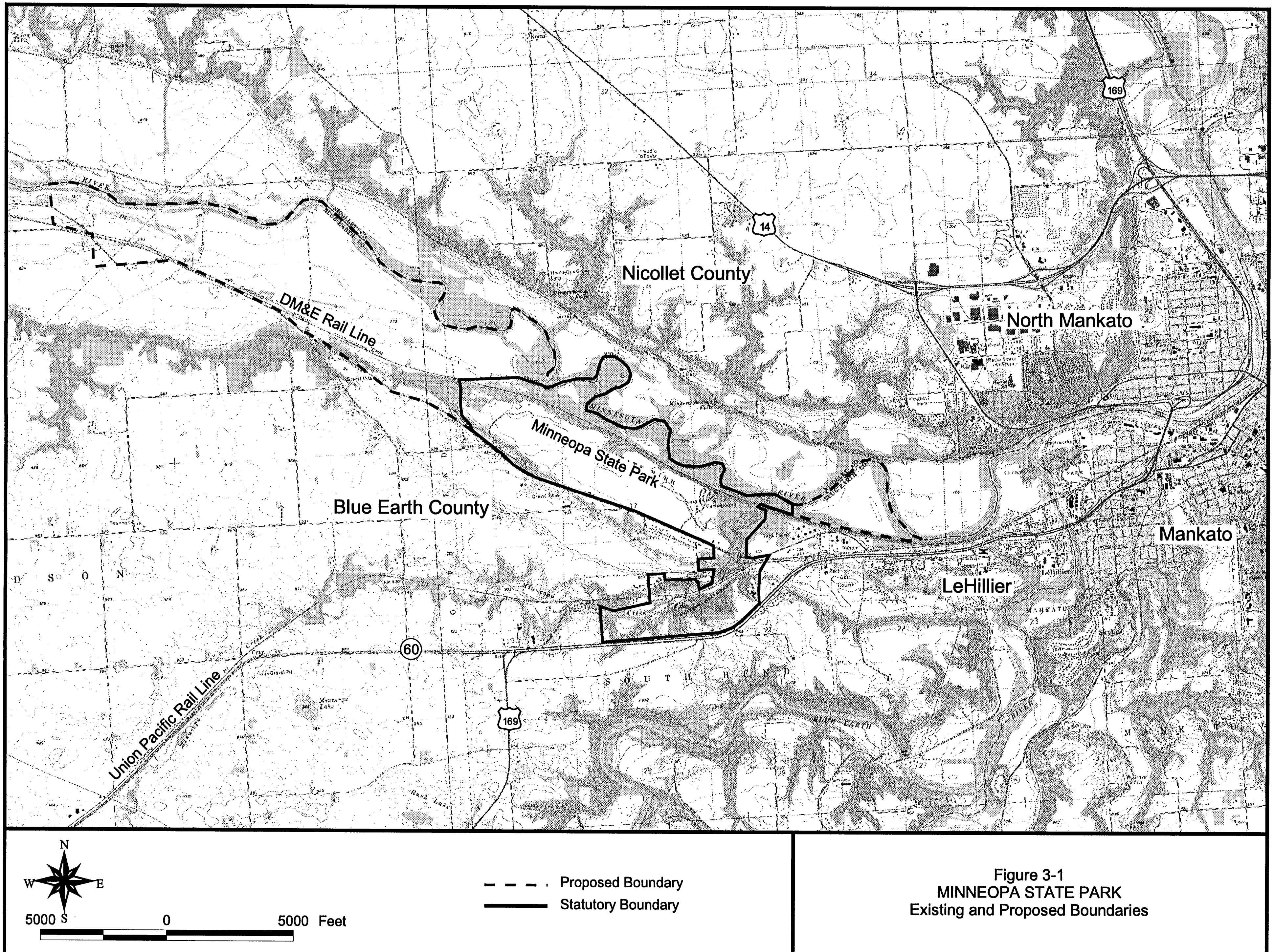

Figure 3-1
MINNEOPA STATE PARK
Existing and Proposed Boundaries

<u>State Trails</u>

Douglas State Trail begins in northwestern Rochester and travels through Douglas before terminating in Pine Island. The 12.5-mile trail was developed on an abandoned railroad grade. This trail consists of two paths. One path is paved for bicyclists, hiking and in-line skaters and the other is a natural surface for horseback riders and snowmobilers. Along this trail are several picnic and rest areas as well as parking. The trail head is approximately one mile north of the existing DM&E rail line and travels north. The trail does not cross the existing DM&E rail line (Minnesota Department of Natural Resources 1998b).

The Sakatah Singing Hills State Trail begins in northeastern Mankato at Lime Valley Road. At this location, the trail is less than one mile east of the rail line. As the trail travels northwest, it parallels the track for approximately 0.5 mile and is less than 500 feet from the rail line. The state trail crosses the existing DM&E rail line at Lime Siding, just west of Eagle Lake and ends east of Interstate 35 at Faribault. This 39-mile trail was developed on an abandoned railroad grade. The trail provides a paved treadway and offers two other short segments of natural treadway. This trail passes through the Sakatah Lake State Park, which offers a separate bicycling path, campgrounds, picnic areas, swimming beach, boat access, and additional hiking trails. The trail itself offers picnic and rest areas, primitive campsites, campgrounds, and parking (Minnesota Department of Natural Resources 1998c).

Red Jacket Trail begins south of Mankato and heads north for approximately 5.6 miles until it reaches Mankato city limits. Once the trail enters city limits it is referred to as the West Mankato Trail. This trail heads north for approximately 2.1 miles. The City of Mankato is in the process of building the North Minnesota River Trail that would connect the West Mankato Trail with the Sakatah Singing Hills State Trail. The proposed trail would be approximately 3.3 miles in length. However, the proposed trail would be displaced if the existing corridor is used. The Red Jacket and West Mankato trails are paved and utilize stretches of abandoned railroad.

3.1.4.9 Utility Corridors

Public utility power lines, telephone cables, roads, oil, gas, and water pipelines occur throughout the area. Many of these cross the existing rail line, others parallel it for some distance. Natural gas needs in the project area are provided by Northern States Power, Peoples Gas, Minnegasco, New Ulm Public Utilities, and Owatonna Municipal Public. Electricity needs are met by Kasson Municipal Electric, Northern States Power, Springfield Public Utilities, New Ulm Public Utilities, Interstate Power, Peoples Coop Power Association, Brown County Rural Electric Association, and Frost-Benco-Wells Electric Coop. Wells appear to be the major source of water for residents. Wastewater treatment is by either mechanical plants or stabilization pond systems

3.1.5 WATER RESOURCES

3.1.5.1 Surface Water

The DM&E rail line crosses several watersheds within the State of Minnesota. They include the Buffalo-Whitewater, Zumbro, Cannon, Le Sueur, Middle Minnesota, Cottonwood, Redwood, and the Lower Big Sioux. Other watersheds along the project area include the Root, Blue Earth, and Upper Minnesota.

Surface water withdrawal for Minnesota in 1990 was between 2,000 and 5,000 million gallons per day (mgd). Total water withdrawal for Minnesota in 1990 was also between 2,000 and 5,000 mgd (United State Geological Survey, No Date-a).

Surface water in the project area occurs as rivers, lakes, streams and ponds. The rivers in the project area include the Mississippi, South Fork Whitewater, Zumbro, Straight, Blue Earth, Little Cottonwood, Cottonwood, and Redwood rivers. The existing rail line has 17 river crossings.

Minnesota Department of Natural Resources (DNR) state protected waters[2] occur in each of the counties present in the project area except for Dodge and Redwood counties. Most of these protected waters are associated with a wildlife management area. The DM&E rail line runs along the southeast side of Prairie Island in Winona County for approximately 0.2 mile. It passes north and south of East Waseca Marsh in Waseca County and along the southwestern end of Lake Benton in Lincoln County. The existing DM&E rail line crosses a total of 4,028 feet of protected waters in these three counties. Protected waters also include all waters within COE jurisdiction which require 404 permitting.

Lake resources in the project area include Goodview, Rice, Goose, Clear, Loon, Born, Alice, Mud, Madison, Eagle, Sleepy Eye, Boise, South Twin, Lake of the Hill, Long, Yankton, Rock, and Benton lakes. Small ponds and stock ponds also occur throughout the project area. They are usually found in pasture land and serve to provide watering areas for livestock.

[2] State protected waters would include all water basins and watercourses that meet the criteria set forth in Minnesota Statutes, Section 103G.005, subd. 15. Protected waters wetlands include all type 3 (inland, shallow, fresh marsh with up to 6 inches of water), type 4 (inland deep fresh marsh with 6 inches to 3 feet of water), and type 5 (inland open fresh water, shallow ponds, and reservoirs usually less than ten feet deep and fringed by a border of emergent vegetation) wetlands that are 10 or more acres in size in unincorporated areas or 2.5 or more acres in size in incorporated areas.

The existing rail line also crosses many perennial and intermittent streams, including 115 intermittent streams and 27 perennial streams. In addition to these, the rail line crosses 30 irrigation ditches. The total of all water crossings for the existing DM&E rail line is nearly 200.

The DNR manages over 600 trout streams totaling more than 2,600 miles statewide. Minnesota has designated trout streams based on the water quality of the habitat in the watershed. Winona, Blue Earth, and Olmsted Counties have designated trout streams that are crossed by, or are in close vicinity to the DM&E rail line. In Winona County, the rail line crosses Garvin Brook eight times. In addition, Burns Valley and Gilmore Creeks are located within two miles of the rail line in Winona County. An unnamed trout stream crosses the rail line once in Blue Earth County. In Olmsted County, Trout Run Creek runs parallel to the main rail line for approximately 0.75 mile northeast of Dover. Trout populations in many streams have increased as a result of habitat improvement projects. Most trout water is in public ownership or easements.

3.1.5.2 Floodplains

The larger rivers within the project area have well-developed floodplains. The floodplains along the Minnesota and Zumbro Rivers lie within the project boundaries and are subject to seasonal fluctuations in flow that often result in flooding due to seasonal heavy rainfall events and spring snow melt. The other smaller rivers within the project boundaries are also subject to flooding. Because of the flooding potential, the Cities of Mankato and LeHillier (Figure 3-2), along the Minnesota River, and the City of Rochester (Figure 3-3), along the Zumbro River, have constructed extensive flood control projects in conjunction with the Federal Government to protect the communities.

Within the community of LeHillier, along the Minnesota River and Blue Earth Rivers, an extensive earthen levee system has been constructed (Figure 3-1). The Union Pacific Railway Company (UP) rail line embankment, over which DM&E operates, is part of this levee system. The rail line runs along the outside slope of the levee, then crosses the levee as it approaches the Blue Earth River railway bridge.

As the rail line crosses the Blue Earth River railway bridge, it enters the City of Mankato, which also has an extensive system of earthen levees and concrete floodwalls (Figure 3-1). The concrete floodwall is located along the Minnesota River and protects the downtown area of Mankato. Its construction, as opposed to the earthen levee, was constructed due to the limited space requirements with the rail facilities operated by Union Pacific Railway Company (UP) and slope stability concerns. The floodwall has openings to provide access to the river and the walking trail that is located along the riverward side of the floodwall. These opening are closed during a flood event to prevent water flooding into the downtown area.

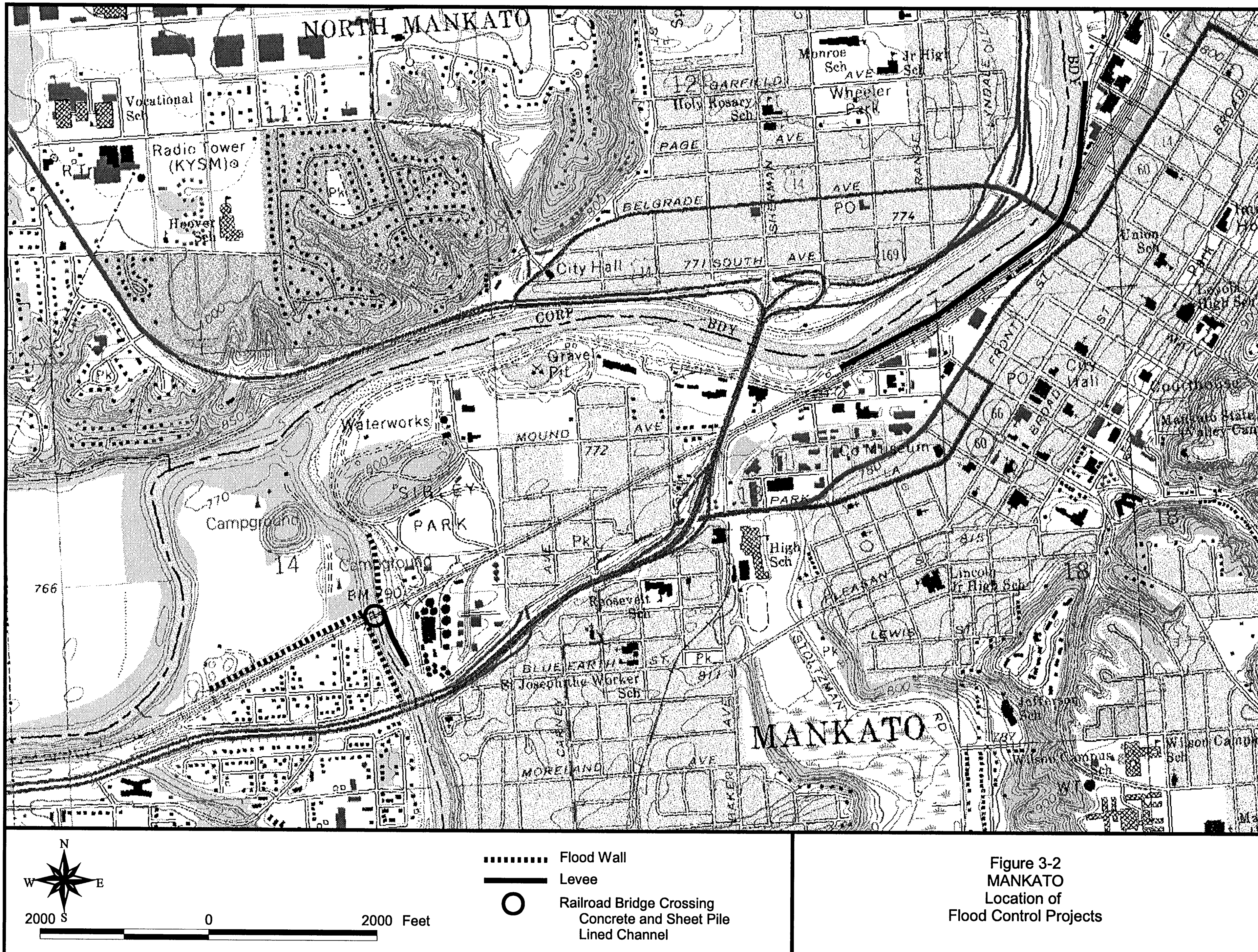

Figure 3-2
MANKATO
Location of
Flood Control Projects

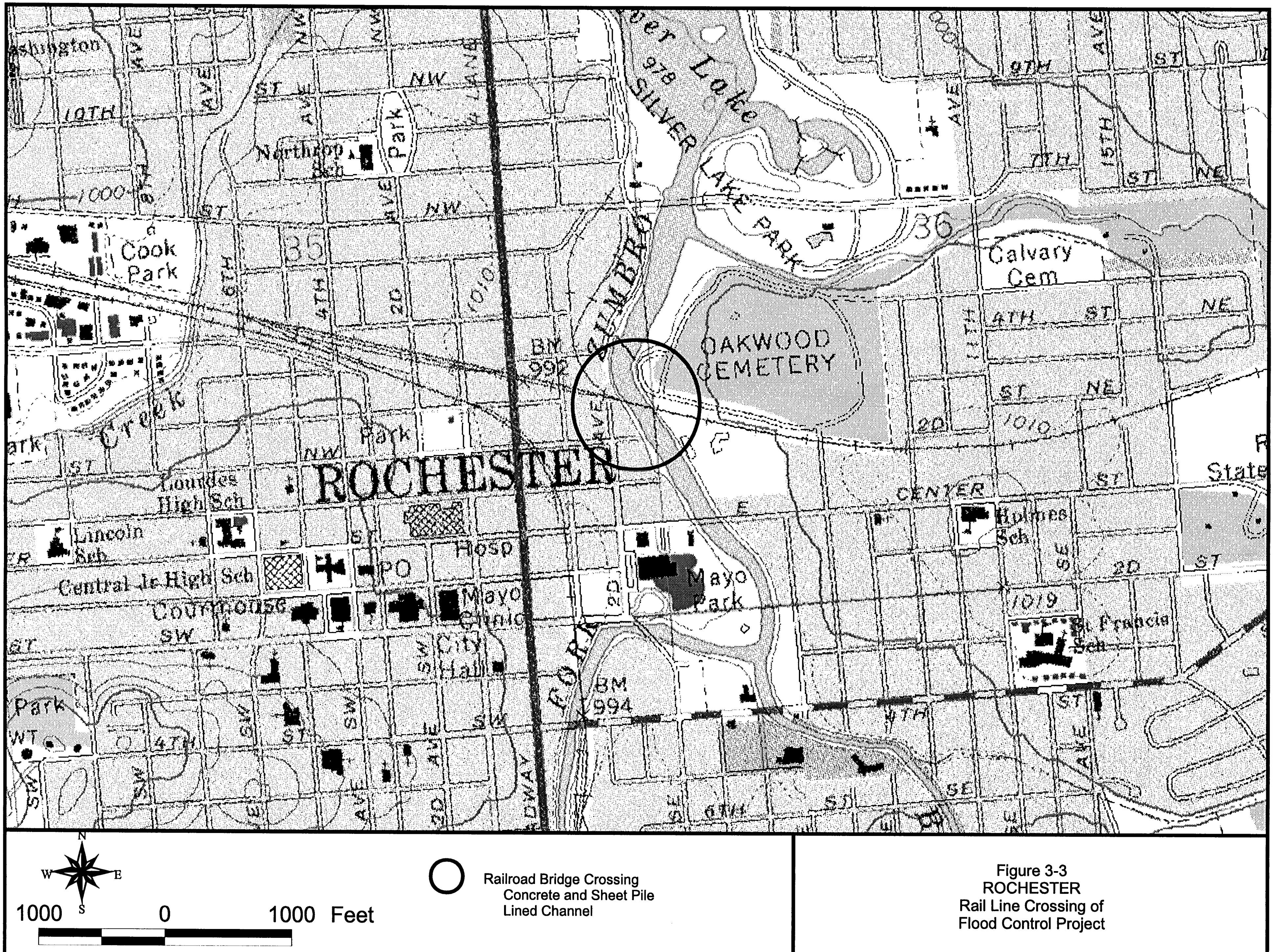

Figure 3-3
ROCHESTER
Rail Line Crossing of
Flood Control Project

Within the community of Rochester, channel improvements have been made along the entire length of the Zumbro River within the city limits (Figure 3-2). These channel improvements include rock slope protection, sheetpile walls, sections of concrete lined channel, and various control structures. In order to promote recreation, a walking trail has been placed along the river and crosses over the rail line operated by DM&E. The existing DM&E rail line crosses these flood control facilities at the Zumbro River railway bridge.

Flood control projects in Minnesota were constructed through joint actions between the U.S. Army Corps of Engineers (COE) and the local sponsor, in this case the affected communities. The COE provided funding, technical advice, and oversight during construction, with the community providing a portion of the funding. However, following construction, the community assumes responsibility to operate and maintain the flood control project. Any modifications to the projects require review by the COE. The COE in turn makes recommendations to the community following its review, as to whether or not the modifications would affect the integrity of the project to withstand a flood event. If the COE indicates the modification may cause the project to fail during a flood event, the community can still undertake the modification at their own risk. However, this would cause the community to assume liability for any damage should the project fail, and may cause the community, its residences, and businesses to be ineligible for flood damage assistance from federal agencies such as the Federal Emergency Management Agency (FEMA). It is because of this potential liability the COE has requested the DM&E provide information and assurances the proposed rail line improvement project will not affect the existing flood control projects that protect the communities of LeHillier, Mankato, and Rochester

3.1.5.3 Wetlands

Wetlands found within the project area are important regional ecosystems. These natural communities provide filtration of sediments and pollutants from surface water runoff, flood water retention, storm water storage basins, erosion control, resting, foraging and nesting habitat for waterfowl and mammals, fish spawning and nursery habitat, and amphibian habitat.

Wetlands often are found in a transition zone between open water and upland systems. These sites are often inundated or saturated for prolonged periods during the growing season (May through September in the project area). Wetland hydrology in the project area is provided by stream flooding, saturation from the water table, and precipitation.

Wetlands are defined, for regulatory purposes, in the Clean Water Act. This definition is used by the Environmental Protection Agency and the COE to administer the Section 404 permit program. Jurisdictional wetlands are defined as follows:

> "Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, bogs and similar areas (40 CFR 230.3 and 33 CFR 328.3)."

In order to be classified as a wetland, an area must possess three characteristics: hydric soils, dominance of hydrophytic vegetation[3], and wetland hydrology. Sites must meet all criteria before being designated as a jurisdictional wetland. A wetland need not have permanent standing or open water, only water or soil saturation during the growing season sufficient to encourage the growth of hydrophytic vegetation. However, the COE may not take jurisdiction over all wetlands. For example, railroad ditches dominated by wetland vegetation located in historically upland areas are not considered jurisdictional by the COE. Rather, the COE prefers to take jurisdiction over only wetland ditches adjacent to existing wetlands.

Wetlands present in the area are based on the dominant vegetation occurring at the site and include emergent, forested, and scrub/shrub. The forested and scrub/shrub wetlands are located along major rivers and streams within the project area. Major river systems where these wetlands occur include the Zumbro, Straight, Blue Earth, and Minnesota rivers. Emergent wetlands are found throughout the project area. Locations and wetland types along the route were identified using National Wetlands Inventory maps. The following provides a brief description of wetlands. A description of vegetation is provided in Section 3.1.8.1.

Forested wetlands are characterized by woody vegetation that is greater than 6.0 meters tall (Cowardin et al. 1979). The tree canopy is dominated by broad-leaved deciduous species, including red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), black ash (*Fraxinus nigra*), and slippery elm (*Ulmus rubra*). These wetlands occur along the edge of streams and rivers within the project area. In addition, these wetlands are often only seasonally flooded during the spring and during heavy runoff periods.

[3] Vegetation adapted to growing in saturated soils for long periods of time.

Scrub/shrub wetlands are characterized by woody vegetation less than 6.0 meters in height. These wetlands consist of a mixture of shrubs and small trees. Common species found in scrub/shrub wetlands include willow (*Salix* spp.), alder (*Alnus* spp.), sedges (*Carex* spp.), rushes (*Juncus* spp.), and jewel-weed (*Impatiens capensis*). Within the project area these wetlands are found along rivers and streams.

Emergent wetlands found within the project area are classified as wet meadow, mixed emergent marsh, or cattail marsh. Hydrology for these wetlands is variable, ranging from seasonally flooded to permanently flooded. Vegetation typically found in the drier wetland areas (i.e. wet meadows and mixed emergent wetlands) include a mixture of bulrushes (*Scirpus* spp.), rushes (*Juncus* spp.), common reed grass (*Phragmites australis*), prairie cord grass (*Spartina pectinata*), reed canary grass (*Phalaris arundinacea*), and umbrella sedges (*Cyperus* spp.). Some common herbs associated with this plant community include broad-leaved arrowhead (*Sagittaria latifolia*), swamp milkweed (*Asclepias incarnata*), sunflowers (*Helianthus* spp.) and bulb-bearing water-hemlock (*Cicuta bulbifera*). The cattail emergent marsh, typically wetter than the previously mentioned wetland communities, is dominated by cattails (*Typha latifolia* and *T. angustifolia*). Other species associated with the cattail emergent marsh include sedges (*Carex* spp.), swamp milkweed, marsh skullcap (*Scutellaria galericulata*), and jewel-weed. The cattail marsh has a peaty mat that develops over time, thus allowing the roots to grow without contact with the bottom substrate.

Much of the project area in Minnesota includes the Prairie Pothole Region. Glaciers left behind many water-holding depressions in southern and western Minnesota. These shallow glacial wetlands are important breeding and resting areas for waterfowl and shorebirds as well as habitat for a variety of wildlife, both terrestrial and aquatic species. However, many of these wetlands have been converted to cropland. This has resulted in the loss of waterfowl and wildlife habitat within the project area.

Total wetland acreage, based on review of National Wetland Inventory (NWI) maps, located within the existing DM&E rail line right-of-way in Minnesota is approximately 187.8 acres. A breakdown of the county wetland acreage located along the existing DM&E rail line is shown in Table 3.1-8. Given that wetland identification criteria differ between the USFWS and the COE, wetlands shown on a NWI map may not be under the jurisdiction of the COE. Similarly, jurisdictional wetlands often are not included on these maps. Consequently, wetland abundance based on NWI maps provides a guide for the identification of potential jurisdictional wetlands.

Table 3.1-8
County Wetland Acreage

COUNTY	WETLAND TYPES (acres)				
	Emergent	Scrub/Shrub	Forested	Other	Total
WINONA	1.5	2.0	5.7	1.1	**10.3**
OLMSTED	34.5	1.2	0.8	1.0	**37.4**
DODGE	0.5	0	0	0	**0.5**
STEELE	3.4	0	0	0	**3.4**
WASECA	15.3	1.1	0	<0.1	**16.5**
BLUE EARTH	29.5	0.8	7.8	0.9	**39.0**
BROWN	13.2	0.8	4.6	1.2	**19.8**
REDWOOD	2.6	0	0	1.0	**3.6**
LYON	28.9	1.1	0.5	1.8	**32.3**
LINCOLN	20.8	0.2	0	4.0	**25.0**
TOTAL	**150.2**	**7.2**	**19.4**	**11.0**	**187.8**

National Wetlands Inventory Maps

3.1.5.4 Groundwater and Wells

3.1.5.4.1 Groundwater

Surficial Aquifer System - Winona, Olmsted, Dodge, Steele, Waseca, Blue Earth, Brown, Redwood, Lyon and Lincoln Counties

The Surficial Aquifer System is the most widespread, extensively used and easily accessible source of water in southern Minnesota. It is comprised mainly of stratified (layered) sand and gravel, glacial deposits, and alluvium (stream deposits). These deposits typically range from 50 to 400 feet in thickness in eastern Minnesota and gradually increase in a westerly direction to reach an average thickness of between 800 and 1,000 feet in Lincoln County.

Much of the Surficial Aquifer System is present at the land surface and is highly susceptible to contamination from human activity. This system is generally well connected to nearly all of the bedrock aquifers below. Surface water is likely to migrate down to these aquifers. Bedrock aquifers are exposed at the land surface only in limited areas and are generally covered by the Surficial Aquifer System (Olcott 1992).

Cambrian-Ordovician Aquifer System - Winona, Olmsted, Waseca and Blue Earth Counties

The Cambrian-Ordovician aquifer system underlies the Surficial Aquifer System in this region and consists of a series of individual aquifers separated by leaky confining units (low permeability layers that are slow to transmit water). These leaky units allow groundwater to flow between aquifers. The Cambrian-Ordovician aquifer system is composed of sandstone and dolomite aquifers and is the second largest source of groundwater for public supply, agriculture, and industrial use in southern Minnesota. This series of aquifers is capped by the Maquoketa confining unit, which forms the top of the Cambrian-Ordovician aquifer system. The bottom of this aquifer system rests on impermeable crystalline rock (Olcott 1992, Whitehead 1996).

Upper Carbonate Aquifer - Olmsted, Dodge and Steele Counties

The Upper Carbonate aquifer underlies the Surficial Aquifer System in this region and consists of limestone, dolomite, and dolomitic limestone. Thickness of the aquifer ranges from 250 to 450 feet. The aquifer is underlain by shale, dolomitic limestone, and limestone which form the lower confining unit. Fracturing, jointing, and dissolution of carbonate layers is common and results in a very productive aquifer. Solution-enlarged openings, including sinkholes, solution cavities, and caves, have made the aquifer extremely porous. Wells screened in these openings are capable of producing very large quantities of water (Olcott 1992, Whitehead 1996).

Cretaceous Aquifer System - Brown, Redwood, Lincoln and Lyon Counties

The Cretaceous Aquifer System underlies the Surficial Aquifer System in this region and consists of thick to thin, discontinuous sandstone beds overlain in places by confining shale and limestone beds. However, in some areas the aquifer is directly overlain by glacial deposits. This aquifer is generally the only source of water in Lincoln, Lyon, Redwood, and Brown counties even though there are limitations imposed on its use based on quality, well yield, and depth. Thickness of the aquifer ranges from approximately 90 to 170 feet in areas of principal use.

The Cretaceous Aquifer System is classified as an artesian aquifer in most places. This artesian condition occurs when water enters, or recharges, an aquifer from a higher elevation than where a well penetrates the aquifer. This results in water that will rise to an elevation above the top of the aquifer in a tightly-cased well which penetrates the aquifer. Water from the above surficial deposits, however, flows downward as recharge through confining beds into the Cretaceous Aquifer System (Olcott 1992, Whitehead 1996).

3.1.5.4.2 Wells

Surficial Aquifer System

The Surficial aquifer system is the primary source of well water in the area. Shallow wells are typically installed for domestic or stock-watering use, whereas deeper and larger wells are used for public supply, agricultural, and industrial use. Groundwater withdrawal from the surficial aquifer system in Minnesota totaled 434 mgd based on 1985 data. The principal use of the groundwater from this system is for public supply (36.2 percent), followed by agriculture (26.5 percent), domestic and commercial (20.9 percent), and industrial (16.4 percent).

Potential well yields in permeable glacial deposits may reach 500 gallons per minute where glacial deposits are thickest. In broad areas of southern Minnesota, wells screened in glacial till may yield 1 to 10 gallons per minute (Olcott 1992, Whitehead 1996).

Cambrian-Ordovician Aquifer

Except for deeply buried parts of this aquifer system, water in the Cambrian-Ordovician aquifer is suitable for all uses. Groundwater withdrawal from this aquifer system totaled 548 mgd based on 1985 data (Olcott 1992, Whitehead 1996).

Upper Carbonate Aquifer

Groundwater withdrawal from the Upper Carbonate aquifer in southeastern Minnesota totaled 20 mgd in 1985. The quality of the water from this aquifer is generally acceptable for public supply, which accounts for the principal use (44.7 percent), followed by agricultural use (25.5 percent), domestic and commercial use (17.1 percent), and industrial use (12.7 percent).

Due to the karstic nature (characteristic of sinkholes, solution cavities and caves) of this aquifer and the thinness or lack of surficial glacial deposits in portions of Olmsted County, this aquifer is susceptible to local contamination from the land surface. The potential for contamination from the land surface is much less in Dodge and Steele counties where thick glacial till is present. Thick glacial till generally slows contamination from reaching the bedrock aquifers below.

Cretaceous Aquifer System

Groundwater withdrawal from the Cretaceous aquifer in southeastern Minnesota totaled 10 mgd in 1985. The primary use of the water was for agricultural purposes (60.7 percent), followed by public-supply use (26.5 percent), domestic and commercial (10.6 percent), and industrial (2.2 percent). Water from the Cretaceous aquifer is typically very hard (high concentrations of calcium carbonate). Although gypsum is found in the aquifer, which when dissolved increases sulfate concentration in the groundwater, the aquifer is pumped extensively. Estimated well yields in the extensively used areas of southern Minnesota range from 100 to 1,000 gallons per minute (Olcott 1992, Whitehead 1996).

3.1.6 AIR QUALITY

The Clean Air Act, which was last amended in 1990, requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for six principal pollutants, which are called "criteria pollutants." They include: sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), lead (Pb), and particulate matter (PM). Attainment status was determined for the project area based on the above pollutants. Attainment refers to the concentrations of criteria pollutants in the area being present at or below levels established by the EPA for the protection of air quality. One county in the project area, Olmsted County, is partially non-attainment for sulfur dioxide. That is, sulfur dioxide is found to be above the levels set by the U.S. EPA for the protection of human health and welfare. (United States Environmental Protection Agency, No Date).

Existing sources of emissions in the project area include the existing DM&E and other railroads, automobiles, trucks, and farm equipment. There are also emissions from manufacturing, construction, mining, and electrical generating plants. However, the rural nature of the area results in emissions being widely scattered. Most individual emissions sources are small. However, in the developed communities, emissions from vehicles and industrial facilities are more concentrated.

3.1.7 NOISE

The project area in Minnesota is primarily rural. Rail, automobile, truck traffic, and farm machinery are the primary noise sources in the project area. There are highways throughout the project area that contribute to ambient noise levels. The existing DM&E rail line is the main source of rail noise in most counties. Other communities, such as Mankato and Winona, experience rail noise from other rail carriers. The DM&E track in Minnesota averages approximately 2-3 through trains per day, with additional rail traffic in the form of wayfreights and switching operations. Table 3.1-9 lists the various sections of rail line in Minnesota and the number of trains that currently operate over them per day.

Table 3.1-9
Existing Rail Line-Minnesota
Train Traffic

Segments	Trains per day* (both ways)
Brookings to Tracy	10
Tracy to Walnut Grove	8
Walnut Grove to Waseca	10
Waseca to Owatonna	14
Owatonna to Lewiston	12
Lewiston to Winona	10

* Includes wayfreights picking up and delivering rail cars to shippers.

The existing DM&E rail line passes through numerous small communities. These communities are exposed to various types and levels of rail noise. Wayside noise includes the noise generated by a passing train. Locomotive engine noise, rail noise, and rail car noise contribute to wayside noise. Additionally, trains are required to sound a warning horn when approaching a public grade crossing. Horn soundings are required from 0.25 mile prior to a crossing until the locomotive passes through the crossing. Horn noise is significantly louder than wayside noise and is designed to provide adequate warning to motorists and pedestrians of an approaching train. Noise receptors along a rail line may be exposed to one or both types of noise. Because horn noise is significantly louder than wayside noise, it extends further from the rail line and affects a greater number of noise receptors. The Section of Environmental Analysis (SEA) determined the distance (contour) from the rail line where the current average daily noise level (L_{dn}) is 65 dBA (level of audible noise at which the day-night equivalent sound level is 65 decibels). Noise receptors located at distances less than the contour experience noise levels greater than 65 dBA. The Surface Transportation Board (Board) considers residences, schools, libraries, hospitals, retirement and nursing homes as sensitive to noise and therefore considers these as noise sensitive receptors. Table 3.1-10 provides the number of noise sensitive receptors currently experiencing average daily noise levels of 65 decibels or more (65dBA L_{dn}) due to various types of rail noise within each community and county.

The following provides a brief profile for the communities along the existing DM&E rail line in Minnesota. The profiles include rail line, community, transportation, and noise receptor information. A summary of the community profile information is provided in Table 3.1-11.

Table 3.1-10
Existing Rail Line - Minnesota
Number of Existing Noise Sensitive Receptors - 65 dBA L_{dn}

County and Communities	Wayside	Wayside/horn	Horn	Total
Winona	**23**	**929**	**3,708**	**4,660**
Winona*	8	857	2,889	3,754
Goodview	0	0	119	119
Minnesota City	7	5	44	56
Stockton	0	13	61	74
Lewiston	0	14	201	215
Utica	0	13	35	48
St. Charles	0	24	326	350
RURAL	8	3	33	44
Olmsted	**1**	**135**	**1,784**	**1,920**
Dover	0	5	75	80
Eyota	0	0	238	238
Chester	0	4	95	99
Rochester	0	56	940	996
Byron	0	68	401	469
RURAL	1	2	35	38
Dodge	**0**	**78**	**762**	**840**
Kasson	0	39	238	277
Dodge Center	0	26	346	372
Claremont	0	8	152	160
RURAL	0	5	26	31

Table 3.1-10
Existing Rail Line - Minnesota
Number of Existing Noise Sensitive Receptors - 65 dBA L_{dn}

County and Communities	Wayside	Wayside/horn	Horn	Total
Steele	**11**	**65**	**624**	**700**
Owatonna	10	56	570	636
Meriden	0	6	25	31
RURAL	1	3	29	33
Waseca	**0**	**67**	**890**	**957**
Waseca	0	37	652	689
Janesville	0	21	214	235
RURAL	0	9	24	33
Blue Earth	**7**	**13**	**237**	**257**
Smiths Mill	0	3	21	24
Eagle Lake	0	8	120	128
Mankato **	0	36	645	681
Judson	0	2	35	37
Cambria	0	0	35	35
RURAL	7	0	26	33
Brown	**4**	**41**	**1,486**	**1,531**
New Ulm	0	11	811	822
Essig	0	0	21	21
Sleepy Eye	0	0	268	268
Cobden	0	1	15	16
Springfield	0	21	233	254
RURAL	4	8	138	150
Redwood	**0**	**6**	**332**	**338**
Sanborn	0	0	81	81
Lamberton	0	2	97	99
Revere	0	0	34	34
Walnut Grove	0	4	109	113
RURAL	0	0	11	11

Table 3.1-10
Existing Rail Line - Minnesota
Number of Existing Noise Sensitive Receptors - 65 dBA L_{dn}

County and Communities	Wayside	Wayside/horn	Horn	Total
Lyon	**0**	**1**	**250**	**251**
Tracy	0	0	125	125
Garvin	0	0	28	28
Balaton	0	1	86	87
Burchard	0	0	4	4
RURAL	0	0	7	7
Lincoln	**0**	**7**	**256**	**263**
Tyler	0	1	125	126
Lake Benton	0	6	99	105
Verdi	0	0	23	23
RURAL	0	0	9	9

* Based on 28 trains per day operated by CP
** Based on 7 trains per day operated by UP, and 3 trains per day operated by DM&E

Winona County

The existing DM&E rail line does not extend into Winona. However, DM&E would interchange traffic with the Canadian Pacific Railway (CP) as part of this project. Approximately 5.3 miles of the CP rail line runs south from the DM&E rail line through Winona. The 1990 population of Winona was 26,438. The public grade crossings in town and ADT's (average daily traffic) are included in Table 3.1-11. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 3,754 based on 28 trains per day.

The existing DM&E rail line starts just west of Goodview. The rail line does not pass through the community; however, the horn noise would affect Goodview. The 1990 population of Goodview was 2,878. There are no public grade crossings in the community. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 119 based on 10 trains per day.

The existing DM&E rail line in Minnesota City trends from the south into the community where it makes a sharp turn and trends southward. The curve in the rail line is located just south of town. The rail line passes through approximately 3,400 feet of the major concentration of Minnesota City, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1994 estimated population of Minnesota City was 261. The public grade crossing in the community is Canton Mills Road with an ADT of 2,000. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 56 based on 10 trains per day.

Just northwest of Stockton, the existing rail line trends northeast to southwest. The rail line passes through approximately 2,000 feet of the major concentration of Stockton, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Stockton was 529. The public grade crossing in the community is Main Street/County Road 23 with an ADT of 1,750. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 74 based on 10 trains per day.

Also in Winona County, the rail line trends east to west through the southern part of Lewiston, Minnesota. The rail line passes through approximately 4,700 feet of the major concentration of Lewiston, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Lewiston was 1,298. The public grade crossings in the community are Dutchman/Township Road 1, County Road 25, and Freemont Street. The ADTs of these crossings are 100, 1,850 and 1,700, respectively. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 215 based on 10 trains per day.

The existing DM&E rail line in Utica trends from northeast to southwest through the center of town. The rail line passes through approximately 2,700 feet of the major concentration of Utica, passing through a commercial area. There are rail loading facilities in the community. The 1990 population of Utica was 220. The public grade crossings in the community are Center Street and 2nd Avenue. The ADTs of these crossings are 950 and 39, respectively. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 48 based on 12 trains per day.

The existing DM&E rail line in St. Charles trends from southeast to west through the southern part of town. The rail line passes through approximately 9,200 feet of the major concentration of St. Charles, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of St. Charles was 2,642. The public grade crossings and ADTs are listed in Table 3.1-11. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 350 based on 12 trains per day.

Olmsted County

The existing DM&E rail line in Dover trends from southeast to northwest along the north side of town. The rail line passes through approximately 2,500 feet of the major concentration of Dover, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Dover was 416. The public grade crossing in the community is Chatfield Street with an ADT of 1,300. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 80 based on 12 trains per day.

The existing DM&E rail line in Eyota trends from southeast to northwest through the center of town. The rail line passes through approximately 3,000 feet of the major concentration of Eyota, passing through a commercial area. There are rail loading facilities in the community. The 1990 population of Eyota was 1,448. The public grade crossings in the community are Center Avenue and County State Aid Highway (CSAH) 7. The ADTs of these crossings are 2,300 and 2,600, respectively. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 238 based on 12 trains per day.

The existing DM&E rail line in Chester trends from east to west just south of this community. The rail line passes through approximately 3,100 feet of this populated place, passing through a commercial area. There are rail loading facilities in the community. Chester is a very small populated community and population information was not available. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 99 based on 12 trains per day.

The existing DM&E rail line in Rochester trends from east to west through the center of town. The rail line passes through approximately 17,500 feet of the major concentration of Rochester, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Rochester was 70,745. The public grade crossings and the ADTs are listed in Table 3.1-11. The community includes high schools, middle schools, elementary schools, college, churches, hospitals, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 996 based on 12 trains per day.

The existing DM&E rail line in Byron trends from east to west through the southern part of town. The rail line passes through approximately 7,800 feet of the major concentration of Byron, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Byron was 2,441. The public grade crossings in the community are 10th Avenue NE, Byron Avenue North, 2nd Avenue NW, and 9th Avenue NW.

The ADTs of these crossings are 100, 3,064, 4,400, and 250, respectively. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 469 based on 12 trains per day.

Dodge County

The existing DM&E rail line in Kasson trends from east to west through the southern part of town. The rail line passes through approximately 6,700 feet of the major concentration of Kasson, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Kasson was 3,514. The public grade crossings in the community are Mantorville Avenue South, 3rd Avenue NW, and 8th Avenue NW. The ADTs of these crossings are 2,750, 360, and 860, respectively. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 277 based on 12 trains per day.

The existing DM&E rail line in Dodge Center trends from east to west through the southern part of town. The rail line passes through approximately 4,750 feet of the major concentration of Dodge Center, passing through a commercial area. There are rail loading facilities in the community. The 1990 population of Dodge Center was 1,954. The public grade crossings and the ADTs are listed in Table 3.1-11. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 372 based on 12 trains per day.

The existing DM&E rail line in Claremont trends from east to west along the south side of town. The rail line passes through approximately 5,300 feet of the major concentration of Claremont, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Claremont was 530. The public grade crossings in the community are County Road 3, Elm, and County Road 1. The ADTs of these crossings are 570, 380, and 550, respectively. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 160 based on 12 trains per day.

Steele County

The existing DM&E rail line in the Owatonna area stops approximately one mile east of Owatonna at milepost 86.1 and begins again just east of State Avenue. The track between these two points in owned by Union Pacific Railroad Company (UP). However, UP has no connections to this section of line and only DM&E operates trains over it. Therefore, the grade crossings along this section are part of this analysis. The existing rail line passes through approximately 20,400 feet of the major concentration of Owatonna, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Owatonna was 19,386. The public grade crossings and ADTs are listed in Table 3.1-11. The community includes high schools, middle schools, elementary schools, college, churches, hospital ,and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 636 based on 12 trains per day.

The existing DM&E rail line in Meriden trends from east to west through the center of town. The rail line passes through approximately 2,000 feet of this populated place, passing through both commercial and residential area. There are rail loading facilities in the community. The 1990 population of Meriden was 693. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 31 based on 14 trains per day.

Waseca County

The existing DM&E rail line in Waseca trends from east to west through the southern part of town. The rail line passes through approximately 9,600 feet of the major concentration of Waseca, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Waseca was 8,385. The public grade crossings and ADTs are listed in Table 3.1-11. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 689 based on 14 trains per day.

The existing DM&E rail line in Janesville trends from east to west through the southern part of town. The rail line passes through approximately 4,100 feet of the major concentration of Janesville, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Janesville was 1,969. The public grade crossings in the community are Teal Street, Main Street, Craig Street, and Skookum Street. The ADTs of these crossings are 1,100, 1,900, 380, and 380, respectively. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 235 based on 10 trains per day.

Blue Earth

The existing DM&E rail line in Smiths Mill trends from southeast to northwest just south of town. The rail line passes through approximately 1,850 feet of the major concentration of Smiths Mill, passing through a commercial area. There are no rail loading facilities in the community. Smiths Mill is very small and population information was not available. The public grade crossing in the area is County Road 37 with an ADT of 460. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 24 based on 10 trains per day.

The existing DM&E rail line in Eagle Lake trends from southeast to northwest through the northern part of town. The rail line passes through approximately 2,800 feet of the major concentration of Eagle Lake, passing through both commercial and residential areas. There are no rail loading facilities in the community. The 1990 population of Eagle Lake was 1,703. The public grade crossings in the community are Agency Street, Third Street, and CSAH 56. The ADTs of these crossings are 870, 380, and 1,000, respectively. The community includes an elementary school, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 128 based on 10 trains per day.

The existing DM&E rail line in the Mankato area stops approximately two miles north of Mankato at milepost 129.6. The DM&E rail line begins again just west of Mankato at milepost 142.25. The track between these two points is owned UP. DM&E has trackage rights on the UP rail line through Mankato. This rail line passes through both commercial and residential areas. There are no rail loading facilities in the community. The 1990 population of Mankato was 31,477. DM&E has no public grade crossings in Mankato. The UP rail line, over which DM&E operates, has 8 public grade crossings. The community includes high schools, middle schools, elementary schools, college, churches, hospital, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 681 along the UP rail line based on 10 trains per day. There are no noise sensitive receptors in the 65 dBA L_{dn} along the existing DM&E rail line east and west of Mankato

The existing DM&E rail line in Judson trends from east to west through the center of town. The rail line passes through approximately 2,650 feet of the major concentration of Judson, passing through a residential area. There are no rail loading facilities in the community. The 1990 population of Judson was 651. There are no public grade crossings in the community. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 37 based on 10 trains per day.

The existing DM&E rail line in Cambria trends from southeast to northwest on the south side of the town. The rail line passes through approximately 2,800 feet of the major concentration of Cambria, passing through a residential area. There are no rail loading facilities in the community. The 1990 population of Cambria was 293. There are no public grade crossings in the community. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 35 based on 10 trains per day.

Brown County

The existing DM&E rail line in New Ulm trends from southeast to northwest through the eastern part of town. The rail line passes through approximately 23,850 feet of the major concentration of New Ulm, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of New Ulm was 13,132. The public grade crossings and ADTs are listed in Table 3.1-11. The community includes high schools, middle schools, elementary schools, college, churches, hospital, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 822 based on 10 trains per day.

The existing DM&E rail line in Essig trends from northeast to southwest through the center of town. The rail line passes through approximately 1,600 feet of this community. There are rail loading facilities in the community. Essig is very small and population information was not available. The public grade crossings in the community are County Road 11/Center Street and Essig West Street/Township Road 131. The ADTs of these crossings are 790 and 780, respectively. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 21 based on 10 trains per day.

The existing DM&E rail line in Sleepy Eye trends from east to west through the center of town. The rail line passes through approximately 7,100 feet of the major concentration of Sleepy Eye, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Sleepy Eye was 3,694. The public grade crossings in the community are 1st Avenue, 2nd Avenue, 4th Avenue SE, and 9th Avenue SE. The ADTs of these crossings are 3,400, 3,100, 1,200, and 980, respectively. The community includes high schools, middle schools, elementary schools, churches, hospital, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 268 based on 10 trains per day.

The existing DM&E rail line in Cobden trends from northeast to southwest along the north side of town. The rail line passes through approximately 1,450 feet of the major concentration of Cobden, passing through both commercial and residential areas. There are no rail loading facilities in the community. The 1990 population of Cobden was 62. The public grade crossing in the community is Center Street with an ADT of 380. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 16 based on 10 trains per day.

The existing DM&E rail line in Springfield trends from northeast to southwest through the southeastern corner of town. The rail line passes through approximately 8,100 feet of the major concentration of Springfield, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Springfield was 2,173. The public grade crossings and ADTs are listed in Table 3.1-11. The community includes high schools, middle schools, elementary schools, churches, hospital, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 254 based on 10 trains per day.

Redwood County

The existing DM&E rail line in Sanborn trends from southeast to northwest through the center of town. The rail line passes through approximately 2,400 feet of the major concentration of Sanborn, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Sanborn was 459. The public grade crossings in the community are Main and South Streets. The ADTs of these crossings are 1,300 and 380, respectively. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 81 based on 10 trains per day.

The existing DM&E rail line in Lamberton trends from east to west through the northern part of town. The rail line passes through approximately 3,700 feet of the major concentration of Lamberton, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Lamberton was 972. The public grade crossings in the community are Main and Ilex Streets. The ADTs of these crossings are 380 and 1,300, respectively. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 99 based on 10 trains per day.

The existing DM&E rail line in Revere trends from east to west through the northern part of town. The rail line passes through approximately 1,900 feet of the major concentration of Revere, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Revere was 117. The public grade crossing in the community is Main Street/County Road 127 with an ADT of 510. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 34 based on 10 trains per day.

The existing DM&E rail line in Walnut Grove trends from east to west through the center of town. The rail line passes through approximately 7,400 feet of the major concentration of Walnut Grove, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Walnut Grove was 625. The public grade crossings in the community are 1st Street, 6th Street, and County Road 5. The ADTs of these crossings are 49, 900, and 1,000, respectively. The community includes middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 113 based on 10 trains per day.

Lyon County

The existing DM&E rail line in Tracy trends generally from east to west through the southern part of town. The rail line passes through approximately 6,100 feet of the major concentration of Tracy, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Tracy was 2,059. The public grade crossings in the community are Center Street, 4th Street, Highline Road 73, and County Road 14. The ADTs of these crossings are 1,450, 2,200, 650, and 320, respectively. The community includes high schools, middle schools, elementary schools, churches, and parks. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 125 based on 8 trains per day.

The existing DM&E rail line in Garvin trends from east to west along the north side of town. The rail line passes through approximately 2,200 feet of the major concentration of Garvin, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Garvin was 149. The public grade crossing in the community is 1st Street with an ADT of 55. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 28 based on 10 trains per day.

The existing DM&E rail line in Balaton trends from southeast to northwest through the center of town. The rail line passes through approximately 1,900 feet of the major concentration of Balaton, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Balaton was 737. The public grade crossing in the community is 2nd Street SW with an ADT of 1,050. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 87 based 10 trains per day.

The existing DM&E rail line in Burchard trends from east to west along the north side of this community. The rail line passes through approximately 800 feet of this community. There are no rail loading facilities in the community. Burchard is very small and population information was not available. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 4 based on 10 trains per day.

Lincoln County

The existing DM&E rail line in Tyler trends from east to west through the center of town. The rail line passes through approximately 4,400 feet of the major concentration of Tyler, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Tyler was 1,257. The public grade crossings in the community are Willow Street, Tyler Street, and County Road 8. The ADTs of these crossings are 380, 3,150, and 1,000, respectively. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 126 based on 10 trains per day.

The existing DM&E rail line in Lake Benton trends from northeast to south through the center of town. The rail line passes through approximately 5,400 feet of the major concentration of Lake Benton, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Lake Benton was 693. The public grade crossings in the community are Center Street and Benton Street. The ADTs of these crossings are 1,100 and 450, respectively. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 105 based on 10 trains per day.

The existing DM&E rail line in Verdi trends from southeast to northwest along the north side of town. The rail line passes through approximately 2,100 feet of the major concentration of Verdi, passing through both commercial and residential areas. There are rail loading facilities in the community. The 1990 population of Verdi was 234. The public grade crossing in the community is Main Street with an ADT of 23. Existing noise sensitive receptors in the 65 dBA L_{dn} contour, due to wayside and horn noise, total 23 based on 10 trains per day.

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Winona	Winona	The CP rail line trends north to south through the center of the community	26,438 [2]	Louisa Mankato Hamilton Main Street Huff Grand Sioux Howard W 7th/S. Baker Wabasha Broadway Jackson 5th Street Bierce Street Pelzer Street	870 8,000 2,050 5,900 12,500 723 630 630 2,400 630 10,400 100 7,600 630 6,300	3,754
	Goodview	West of Goodview	2,878 [2]	41st Street 54th Street	1,380 2,000	119
	Minnesota City	South into the community then southward	261 [3]	Canton Mills Road	100	56
	Stockton	Northeast to southwest through the town	529 [2]	Main Street/CR 23	1,750	74

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Olmsted	Lewiston	East to west through south Lewiston	1,298 [2]	Dutchman/Township Road 1 CR 25 Freemont Street	100 1,850 1,700	215
	Utica	Northeast to southwest through the center of town	220 [2]	Center Street 2nd Avenue	950 39	48
	St. Charles	Southeast to west through the southern part of town	2,642 [2]	Terry Drive Richland Avenue Whitewater Avenue St. Charles Avenue West 11th Street CR 126/West End Road	500 380 4050 780 480 380	350
	Dover	Southeast to northwest along the north side of town	416 [2]	Chatfield Street	1,300	80
	Eyota	Southeast to northwest through the center of the town	1,448 [2]	Center Avenue CSAH 7	2,300 2,600	238
	Chester	East to west just south of the community	Not available	none		99

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Olmstead *(continued)*	Rochester	East to west through the center of the city	70,745 [2]	15th Avenue NE 11th Avenue NE 9th Avenue NE 7th Avenue NE 2nd Avenue NE Broadway 1st Avenue NW 4th Avenue NW 6th Avenue NW 11th Avenue NW 7th Street NW	955 10,800 820 870 8,850 25,020 4,726 7,200 3,800 13,198 6,900	996
		East to west through the center of the city	70,745 [2]	15th Avenue NE 11th Avenue NE 9th Avenue NE 7th Avenue NE 2nd Avenue NE Broadway 1st Avenue NW 4th Avenue NW 6th Avenue NW 11th Avenue NW 7th Street NW	955 10,800 820 870 8,850 25,020 4,726 7,200 3,800 13,198 6,900	996

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Olmsted *(continued)*	Byron	East to west through the southern part of town	2,441 [2]	10th Avenue NE Byron Avenue North 2nd Avenue NW 9th Avenue NW 19th Avenue NW	100 3,064 4,400 250 100	469
Dodge	Kasson	East to west through the southern part of town	3,514 [2]	Mantorville Avenue South 3rd Avenue NW 8th Avenue NW	2,750 360 860	277
	Dodge Center	East to west through the southern part of town	1,964 [2]	Airport Drive South 4th Avenue SE 2nd Avenue SE 1st Avenue SE Central 1st Avenue SW 2nd Avenue SW 3rd Avenue NW	135 380 380 380 380 380 380 3,300	372
	Claremont	East to west along the south side of town	530 [2]	CR 3 Elm CR 1	570 380 550	160

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Steele	Owatonna	Stops approximately one mile east of Owatonna and begins again just east of State Avenue	19,386 [2]	Partridge Avenue Rice Lake Street East Vine Street Chestnut Street Rose Street Pine Avenue North Elm Avenue North Cedar Avenue State Avenue Park Drive 24th Avenue/CR 75 32 Avenue/TR 229	500 500 200 200 2,000 2,000 1,500 5,000 5,600 2,000 2,700 2,000	636
	Meriden	East to west through the center of town	693 [2]	SW 92nd Avenue 178th Street	555 55	31
Waseca	Waseca	East to west through the southern part of town	8,385 [2]	8th Street SE 7th Street SE 5th Street SE State Street 2nd Street SW 4th Street SW CR 57	2,800 200 2,700 8,900 1,050 2,700 650	689

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Waseca *(continued)*	Janesville	East to west through the southern part of town	1,969 [2]	Teal Street Main Street Craig Street Skookum Street	1,100 1,900 380 380	235
Blue Earth	Smiths Mill	Southeast to northwest just south of town	Not available	CR 37	460	24
	Eagle Lake	Southeast to northwest through the northern part of town	1,703 [2]	Agency Street Third Street CSAH 56	870 380 1,000	128
	Mankato	Stops approximately 2 miles north of Mankato and begins again just west of Mankato	31,477 [2]	none	N/A	681
	Judson	East to west through the center of town	651 [2]	none	N/A	37
	Cambria	Southeast to northwest on the south side of town	293 [2]	none	N/A	35

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Brown	New Ulm	Southeast to northwest through the eastern part of town	13,132 [2]	Tower Road South 20th Street South 16th Street South 12th Street South 7th Street South 3rd Street South 1st Street Center Street North 1st Street North 3rd Street North 17th and Minnesota North 20th Street Boundary Street/North 23 Street	50 4,500 630 800 550 600 1,400 1,100 630 1,750 970 2,300 630	822
	Essig	Northeast to southwest through the center of town	Not available	CR 11/Center Street Essig West Street/TR 131	790 780	21
	Sleepy Eye	East to west through the center of town	3,694 [2]	1st Avenue 2nd Avenue 4th Avenue SE 9th Avenue SE	3,400 3,100 1,200 980	268
	Cobden	Northeast to southwest	62 [2]	Center Street	380	16

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Brown *(continued)*	Springfield	Northeast to southwest through the southeastern corner of town	2,173 [2]	CR 5 Sanborn Street Washington Avenue Lincoln Street Cass Street O'Connell Avenue Burns Avenue	1,000 1,000 380 380 1,650 770 380	254
Redwood	Sanborn	Southeast to northeast through the center of town	459 [2]	Main Street South Street	1,300 380	81
	Lamberton	East to west through the northern part of town	972 [2]	Main Street Ilex Street	380 1,300	99
	Revere	East to west through the northern part of town	117 [2]	Main Street/CR 127	510	34
	Walnut Grove	East to west through the center of town	625 [2]	1st Street 6th Street CR 5	49 900 1,000	113

Table 3.1-11
Summary Information for Minnesota Communities along the Existing DM&E Rail Line

County	Community	Rail Line Location	Community Population	Public Grade Crossings	ADT	Noise Sensitive Receptors [1]
Lyon	Tracy	East to west through the southern part of town	2,059 [2]	Center Street 4th Street Highline Road 73 CR 14	1,450 2,200 650 320	125
	Garvin	East to west along the north side of town	737 [2]	2nd Street SW	1,050	28
	Burchard	East to west along the north side of town	Not available	none	N/A	4
	Balaton	Southeast to northwest through the center of town	737 [2]	2nd Street SW	1,050	87
Lincoln	Tyler	East to west through the center of town	1,257 [2]	Willow Street Tyler Street CR 8	380 3,150 1,000	126
	Lake Benton	Northeast to south through the center of town	693 [2]	Center Street Benton Street	1,100 450	105
	Verdi	Southeast to northwest along the north side of town	234 [2]	Main Street	23	23

[1] Noise sensitive receptors in the 65 dBA Ldn contour based on wayside and horn noise
[2] 1990 population
[3] 1994 population

3.1.8 BIOLOGICAL RESOURCES

3.1.8.1 Vegetation

The existing DM&E rail line in Minnesota passes through approximately 66 miles of pasture land, 200 miles of cropland, 34 miles of native prairie, and over 130 miles of woodland. The natural vegetation in the Minnesota project area includes the Eastern Deciduous Forest and Prairie Parkland Plant Communities. Southeastern, central and parts of western Minnesota contain the deciduous forests, which are characterized by Maple-Basswood Forest, Oak Forest, and Lowland Hardwood Forest (Minnesota Department of Natural Resources 1999). The original vegetation type of the Prairie Parkland was Tallgrass Prairie, which extended across southern and western Minnesota. Historically, Minnesota had 18 million acres of prairie; however, only 150,000 acres remain today (Minnesota Department of Natural Resources 1999).

Tallgrass Prairie

The Minnesota Tallgrass Prairies are some of the most diverse on the continent. They contain three types of prairie, including mesic, dry, and wet, described below. The soil moisture level determines the diversity in grass and forb species present in a geographic location. The Minnesota County Biological Survey has identified 34 miles of native prairie, approximately 412.1 acres,[4] within the existing DM&E rail line right-of-way (Minnesota Department of Natural Resources 1999). The miles of native prairie occurring within the right-of-way of each county are shown in Table 3.1-12.

Table 3.1-12
Minnesota Native Prairie Within the DM&E Right-of-Way

County	Miles of Native Prairie
Blue Earth	0.9
Brown	9.0
Dodge	0.9
Lincoln	5.9

[4] Based on an average right-of-way width of 100 feet.

Table 3.1-12 Minnesota Native Prairie Within the DM&E Right-of-Way	
County	**Miles of Native Prairie**
Lyon	5.3
Olmsted	3.2
Redwood	3.0
Steele	1.8
Waseca	4.3
Total	34.3
MCBS 1998	

<u>Mesic Prairie</u>

Mesic prairies occur on level to rolling topography, with slopes averaging less than ten percent. The soils in this prairie type contain a thick, dark mineral surface. These soils range from poorly-drained to well-drained (Minnesota Department of Natural Resources 1999). The mesic prairie is a fire dependent plant community. In the absence of fire, this plant community can be invaded by trees and shrubs (Minnesota Department of Natural Resources 1999). This dependence on fire is the result of rich soils and moisture, which allow woody plant species to invade a site. The mesic prairie was once the most common in Minnesota; however, most of this plant community has been converted to agriculture. Historically, this prairie type occurred within all the counties in the project area.

The dominant native grass species present in the mesic prairie plant community include big bluestem (*Andropogon gerardii)*, Indiangrass (*Sorghastrum nutans),* and prairie dropseed (*Sporobolus heterolepis).* On drier sites, little bluestem (*Schizachyrium scoparium)* and porcupine grass (*Stipa spartea)* become important grasses (Minnesota Department of Natural Resources 1999). Switchgrass (*Panicum virgatum*), reed canary grass, and prairie cordgrass are found on wetter, mesic sites. Forb species are varied and abundant in this plant community. Common mesic prairie forb species include white and purple prairie-clover (*Petalostemon candidum* and *Petalosteum purpureum*), rough blazing-star (*Liatris aspera*), smooth aster (*Aster laevis*), prairie larkspur (*Delphinium virescens*), downy phlox (*Phlox pilosa*), smooth rattlesnake-root (*Prenanthes racemosa*), and maximilian sunflower (*Helianthus maximilianii*).

The purple coneflower (*Echinacea angustifolia*) is common on drier sites in the western part of this plant community.

Wet Prairie

Wet prairies occur throughout the project area. They are found in the southern and western part of the Minnesota Tallgrass Prairie plant community (Minnesota Department of Natural Resources 1999). This prairie occurs in depressions and drainage ways where the water table can remain in the plant root zone for several weeks. Soils in this plant community are poorly-drained. Soil type is a major indicator as to the presence of this prairie.

Grasses and sedges are the dominant plant species found in this community. In eastern Minnesota, prairie cordgrass and blue-joint grass (*Calamagrostis canadensis*) are the major cover-forming grasses. Bog reed-grass (*Calamagrostis inexpansa*), big bluestem, and mat muhly (*Muhlenbergia richardsonis*) are the major grasses occurring in western Minnesota. Other common grasses found in the wet prairie include switchgrass, wheatgrass (*Agropyron trachcaulum*), fowl meadow grass (*Poa palustris*) and sweet grass (*Hierocloe odorata*). Sartwell's and wooly sedge (*Carex sartwellii* and *Carex sp.*) are commonly found in this prairie. Common wet prairie forbs include New England aster (*Aster novae-angliae*), yellow star grass (*Hypoxis hirusta*), sawtooth sunflower (*Helianthus grosseserratus)*, giant goldenrod (*Solidago gigantea*), tall meadow rue (*Thalictrium dasycarpum),* swamp lousewort *(Pedicularis lanceolata),* blazing-star *(Liatris ligulistylis*), and closed gentian (*Gentiana andrewsii*).

Dry Prairie

The dry prairie occurs on undulating to rough topography. This prairie has well-drained soils ranging from nearly pure sand to thick, dark mineral soils. However, the soils present in this prairie contain less organic matter than those found in the mesic prairie soils. Grasses that thrive in this plant community have adapted to the drier conditions normally found in this type of prairie.

Minnesota dry prairies have a greater number of Great Plains species than found in the mesic prairie (Minnesota Department of Natural Resources 1999). These species are associated with the mixed grass prairie, which is characterized by short and medium tall grasses. The most common grass species in this plant community include porcupine grass, little bluestem, side-oats grama (*Bouteloua curtipendula*), and prairie junegrass (*Koeleria macrantha*). In addition, big bluestem is present in this plant community, although not as abundantly as in the mesic prairie. The sun-loving sedge (*Carex heliophilia*) is the most abundant sedge in this prairie. Some common forb species found in the dry prairie include stiff sunflower (*Helianthus rigidus*), prairie smoke (*Geum triflorum*), dotted blazing star (*Liatris punctata*), green milkweed (*Asclepis viridiflora*), gray goldenrod (*Solidago nemoralis*), prairie golden-aster (*Heterotheca villosa*), Missouri goldenrod (*Solidago missouriensis*), and narrow-leaved puccon (*Lithosperum incisum*).

Deciduous Forests

The deciduous forest is found in the central and eastern part of the project area. However, the western portion of the project area contains isolated sections of this plant community. Types of deciduous forests found within the project area include the Maple-Basswood Forest, Oak Forest, and the Lowland Hardwood Forest (Minnesota Department of Natural Resources 1999).

Maple-Basswood Forest

The Maple-Basswood Forest is common from south east to west central Minnesota. This forest is late-successional and often succeeds mixed Oak Forest (Minnesota Department of Natural Resources 1999). Catastrophic fires are rare in this forest, thus the potential exists to develop into an old-growth forest. Most of this forest type in the project area has been converted to agriculture (Minnesota Department of Natural Resources 1999).

Basswood (*Tilia americana*) and sugar maple (*Acer saccharum*) are the common canopy species in this forest community. Other species occurring in the Maple-Basswood Forest include slippery elm (*Ulmus rubra*), northern red oak (*Quercus rubra*), bur oak (*Quercus macrocarpa*), green ash, and white ash (*Fraxinus americana*). The dense forest canopy permits little light to reach the forest floor, thus forb species must emerge in spring before the tree leaves are developed. These species bloom, produce seeds, and die back in May or early June. Some common forbs found in the Maple-Basswood Forest include spring beauty (*Claytonia spp.*), Dutchman's breeches (*Dicentra cucullaria*) and trout-lily (*Erythronium* spp.).

Oak Forest

The Oak Forest is most common on dry to dry-mesic sites in the Minnesota deciduous forest zone (Minnesota Department of Natural Resources 1999). The tree species composition in the Oak Forest contains at least 30 percent oaks.

Dry Oak Forest is dominated by northern pin oak (*Quercus ellipsoidalis*) and white oak (*Quercus alba*). The species composition changes in southeastern Minnesota, as black oak (*Quercus velutina*) and bur oak are often the dominant species. This forest is characterized by an open canopy that allows the formation of a dense shrub layer. Some common species in the shrub layer include American hazel (*Corylus americana*), gray-bark dogwood (*Cornus foemina*), blueberries (*Vaccinium angustifolium*), and blackberry (*Rubus allegheniensis*). Common ground cover species include wild geranium (*Geranium maculatum*), wild sarsaparilla (*Aralia nudicaulis*), Virginia creeper (*Parthenocissus quinquefolia*), and hog-peanut (*Amphicarpa bracteata*).

The Dry Oak Forest had been dependent on fire for oak regeneration. However, with fire now rare in this forest, the basswood and red maple are increasing in abundance (Minnesota Department of Natural Resources 1999).

White oak, northern red oak, and bur oak dominate the dry/mesic Oak Forest. Other tree species found in this forest include basswood, green ash, big-toothed aspen (*Populus gradidentata*), and bitternut hickory (*Carya cordiformis*). Fewer shrub species are present in the mesic oak stands than in the Dry Oak Forest. However, this allows more forb species to flourish. Some common forbs found in the Mesic Oak Forest include wild geranium (*Geranium maculatum*), rattlesnake plantain (*Goodyera repens*), and false Solomon's seal (*Smilacina racemosa*).

Little oak regeneration occurs in the mesic oak community. Over time, the species composition will change to a Maple-Basswood Forest. These forests tend to be drier than the typical Maple-Basswood Forest, thus they have a different forb composition (Minnesota Department of Natural Resources 1999).

Lowland Hardwood Forest

Lowland Hardwood Forest communities can be found in areas with abundant soil moisture and are most commonly located in floodplains. The larger lowland forests are located where flooding is an annual event. Southern Minnesota's high temperatures, long frost-free period, and high humidity create ideal growing conditions for this forest community (Minnesota Department of Natural Resources 1999). Tree species tolerant of periodic soil saturation dominate the canopy.

Common Lowland Hardwood Forest species include silver maple (*Acer saccharinum*), black willow (*Salix nigra*), cottonwood (*Populus deltoides*), river birch (*Betula nigra*), American elm (*Ulmus americana*), slippery elm (*Ulmus rubra*), green ash, and swamp white oak. Because of the frequent flooding and a closed canopy, ground layer species are limited to vines such as Virginia creeper. The forb layer is composed of short-lived species such as cleavers (*Galium* *aparine*), sedges (*Carex spp.*), and wood nettle (*Urtica* spp.) (Minnesota Department of Natural Resources 1998f).

Other

Other vegetation along DM&E's existing route in Minnesota would include farm crops. Farming is the principal enterprise in the project area. Anywhere from 80-96 percent of each county is dedicated to farmland. Corn and soybeans are the primary crops grown, with alfalfa, oats, and wheat being secondary crops. Other vegetation types include ornamentals and lawns associated with area residences, businesses, and parks.

3.1.8.2 Wildlife

Many wildlife species have traditionally utilized the project area for seasonal and year-round habitation. Changes in land use from native prairies and forests to livestock grazing and agricultural production have had an impact on wildlife habitat availability and subsequent wildlife use of the area. However, many species have adapted to the changes and thrive under current conditions.

3.1.8.2.1 Big Game

White-tailed Deer

White-tailed deer (*Odocoileus virginianus*) is the only big game species in southern Minnesota and is distributed throughout the project area. White-tailed deer are browsers, feeding mainly on leaves, twigs, and buds of woody plants. They may be found in a wide variety of brushy or forested habitats across Minnesota. In the Mankato area, for example, deer travel south from Minneopa State Park along the Blue Earth and Le Seuer River valleys.

The 1997 total deer harvest shows that southeastern Minnesota had more deer taken per square mile (2.7-8.6 deer/ sq. mi.) than the rest of the project area. The lowest number of deer taken per square mile occurred in the western portion of the project area where the number of deer taken decreased to 0-1.5 deer per square mile. The 1989 hunter success rates for the project area ranged from 30-40 percent success to more than 40 percent success. The southeastern portion of the project area also had the most hunters per square mile in 1989, with 6-8 hunters per square mile. The rest of the project area ranged from 0-2 hunters per square mile to 4-6 hunters per square mile in some areas. The number of days hunted per hunter in 1989, 6-11 days, was rather uniform throughout the project area, while days hunted before taking a deer was 1-3 days in the project area.

3.1.8.2.2 Game Species

Upland Birds

The predominant upland gamebird species in the proposed project area include ring-necked pheasant (*Phasianus colchicus*), and gray partridge (*Perdix perdix*). Additionally, wild turkey (*Melagris gallopavo*) ranges have expanded south of Mankato and also occur throughout the project area. Other species common to Minnesota include ruffed grouse (*Bonasa umbellus*), mourning dove *(Zenaida macroura),* and American woodcock (*Scolopax minor*). The ring-necked pheasant and Gray partridge are distributed throughout southern Minnesota. Ruffed grouse, found in eastern Minnesota, prefer forests with a combination of openings, brush and hardwoods, or a mixture of hardwoods and conifers. Mourning doves are found in woodlands, fields, and residential areas. Woodcocks are found in woodland habitats.

Waterfowl

The Mississippi Flyway covers much of the State of Minnesota. In the fall, migrating ducks, geese, and swans fly through Minnesota and use the river valleys and large wetlands on their way to reach suitable wintering grounds. When spring arrives, waterfowl make the same journey back north to their respective breeding grounds. Some common species found using the Mississippi Flyway include mallard (*Anas platyrhynchus*), American black duck (*Anas rubripes*), American wigeon (*Anas americana*), blue-winged teal (*Anas discors*), green-winged teal (*Anas crecca*), wood duck (*Aix sponsa*), canvasback (*Aythya valis ineria*), bufflehead (*Bucephala albeola*), greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*), common goldeneye (*Bucephala clangula*), ruddy duck (*Oxyura jamaicensis*), hooded merganser (*Lophodytes cucullatus*), common merganser (*mergus merganser*), tundra swan (*Cygnus columbianus*), and Canada goose (*Branta canadensis*). Waterfowl use seasonal and permanent wetlands, rivers, streams, ponds, and lakes throughout the project area for rearing young, breeding, resting, feeding, and roosting. During migrations, they may utilize the forage provided in agricultural fields. They may congregate in large numbers prior to migrating south (known as staging) on area wetlands, feeding in agricultural fields in large numbers, potentially causing damage to unharvested grains and winter wheat. Vegetated wetlands, upland grasslands, pastures, and agricultural fields may be used in the spring for nesting.

Small Game and Furbearers

The variety of habitats in the project area, including forest, cropland, pasture, native prairie, fencerows, floodplains, and wetlands, provide habitat for a variety of small game and furbearer species. The small game and furbearing species that may be found in the proposed project area include the Eastern cottontail rabbit (*Sylvilagus floridanus*), Eastern fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*), red squirrel (*Tamiasciurus hudsonicus*), ground squirrel (*Citellus franklini*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethica*), coyote (*Canis latrans*), red fox (*Vulpes fulva*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon loter*), badger (*Taxidra taxus*), river otter (*Lutra canadensis*), mink (*Mustela vison*), long-tailed weasel (*Mustela erminea*), short-tailed weasel (*Mustela erminea*), and least weasel (*Mustela rixosa*). The Eastern cottontail prefers disturbed vegetation and is usually found in suburban areas. The Eastern fox squirrel is usually found in small forest habitats, gray squirrels prefer mature, dense forests, and red squirrels are dependent on evergreen forests. Ground squirrels are usually found in prairies and pastures. Beaver, muskrat, river otter, and mink are found in a variety of wetland habitats. Coyote are extremely adaptable and can be found in almost every conceivable habitat type. Red fox prefer rolling farmlands; grey fox prefer small wooded areas with a brush understory and rock outcrops. Raccoon are found in areas where they have ready access to water. Weasels seem to prefer boreal habitats that may include agricultural land, woodlands, meadows, and mountains.

3.1.8.2.3 Non-game Species

Amphibians

Some common species of amphibians that may be found in the proposed project area include gray tiger salamander (*Ambystoma* spp.), Eastern tiger salamander (*Ambystoma tigrinum triginum*), mudpuppy (*Necturus maculosus*), central newt (*Notophthalmus viridescens*), American toad (*Bufo americanus*), great plains toad (*Bufo cognatus*), gray treefrog (*Hyla chrysoscelis/versicolor*), Northern spring peeper (*Hyla crucifer*), Western chorus frog (*Pseudacris triseriata*), boreal chorus frog (*Pseudacris triseriata maculata*), green frog (*Rana clamitans*), pickerel frog (*Rana palustris*), Northern leopard frog (*Rana pipiens*), and wood frog (*Rana sylvatica*).

Reptiles

The smooth softshell (*Apalone mutica*), Western spiny softshell (*Trionyx spinifer harwegi*), Eastern spiny softshell (*Trionyx spinifer spinifer*), common snapping turtle (*Chelydra serpentina*), Western painted turtle (*Chrysemys picta belii*), Blanding's turtle (*Emydoidea blandingii*), wood turtle (*Clemmys insculpta*), false map turtle (*Graptemys pseudogeographica*), prairie racerunner (*Cnemidophorus sexlineatus*), five-lined skink (*Eumeces fasciatus*), Northern prairie skink (*Eumeces septentrionalis spetentrionalis*), timber rattlesnake (*Crotalus horridus*), prairie ringneck snake (*Diadophis punctatus arnyi*), black rat snake (*Elaphe obsoleta*), Western fox snake (*Elaphe vulpina vulpina*), plains hognose snake (*Heterodon nasicus nasicus*), Eastern hognose snake (*Heterodon platyrhinos*), Northern redbelly snake (*Storeria occipitomaculata occipitomaculata*), Eastern milk snake (*Lampropeltis triangulum*), Northern water snake (*Nerodia sipedon*), bullsnake (*Pituophis melanoleucus*), Texas brown snake (*Storeria dekayi texani*), Black Hills redbelly snake (*Storeria occipitomaculata.*), Western plains garter snake (*Thamnophis radix haydeni*), red-sided garter snake (*Thamnophis sirtalis parietalis*), and Eastern garter snake (*Thamnophis sirtalis sirtalis*) have been reported from the proposed project area. The fox snake (*Elaphe vulpina*), milk snake (*Lampropeltis triangulum*), and racer (*Coluber constrictor flaviventris*) are species of special concern that may be found in the river valleys in the proposed project area (Strgar-Roscoe-Fausch, Inc. 1993).

Songbirds

Several species of non-game forest birds nest in the river valleys or migrate through the proposed project area. Bank swallows (*Riparia riparia*) are common around Mankato near the Le Sueur River. Other species include the killdeer (*Charadrius vociferus*), common nighthawk (*Chordeiles minor*), horned lark (*Eremophila alpestris*), Eastern kingbird (*Tyrannus tyrannus*), American crow (*Corvus brachyrhynchos*), black-capped chickadee (*Parus atricapillus*), American robin (*Turdus migratorius*), gray catbird (*Dumetella cardinensis*), brown thrasher (*Toxostoma rufum*), common grackel (*Quiscalus quiscula*), blue jay (*Cyanocitta cristata*), European starling (*Sturnus vulgaris*), and house sparrow (*Passer domesticus*) (Ashton and Dowd). Songbirds are protected by the Federal Migratory Bird Treaty Act. The law states that federal actions may not destroy active nests (nests that contain eggs or young birds, usually between April and August). Nests that are in the process of being constructed or those that have been abandoned after a breeding season are not considered to be active (Strgar-Roscoe-Fausch, Inc. 1993).

Shorebirds

Semipalmated plovers (*Choradrius semipalmatus*), piping plovers (*Charadrius melodus*), common terns (*Sterna hirundo*), great blue herons (*Ardea herodias*), night herons (*Nyctanassa* spp.), lesser yellowlegs (*Tringa flavipes*), American bitterns (Botaurus lentiginosus), king rails (*Rallus elegans*), American avocet *(Recurvirostra americana*), white-faced ibis (*Plegadis chihi*), and a variety of sandpipers (*Calidris* spp.) are a few of the shorebirds that occur in Minnesota. Shorebirds are commonly found along lake shores and in wetland areas where they forage for vegetation, insects, fish, or small animals. Shorebirds are ground-nesters throughout the project area, using wetlands, uplands, and agricultural fields.

Small Mammals

Common small mammals that may occur in the proposed project area include opossum (*Didelphis marsupialis*), short-tailed shrew (*Blarina brevicauda*), least shrew (*Cryptotis parva*), Eastern mole (*Scalopus aquaticus*), little brown myotis (*Myotis lucifugus*), Keens myotis (*Myotis* spp.), silver-haired bat (*Lasionycteris noctivagans*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), Eastern chipmunk (*Tamias striatus*), thirteen-lined ground squirrel (*Citellus tridecemlineatus*), plains pocket mouse (*Perognathus flavescens*), Western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), meadow vole (*Microtus pennsylvanicus*), and prairie vole (*Microutus ochrogaster*).

Raptors

Each fall, the Mississippi River Valley becomes a migration corridor for many species of waterfowl, raptors, and shorebirds. Bald eagles (*Haliaeetus leucocephalus*) are, perhaps, the most famous raptor species in Minnesota. Bald eagle populations have grown significantly. The bald eagle was recently downlisted by the USFWS from endangered to threatened and is currently proposed for further downlisting, which would remove it from protection under the Endangered Species Act. Over the years, bald eagles have expanded their nesting range from northern Minnesota into the southeastern part of the state. Within the past 10 years the nesting eagle populations have even reached into the Minnesota River Valley in western Minnesota. The recovery of bald eagles in Minnesota is particularly impressive. The population has now exceeded its recovery goal of 300 occupied nest territories and is growing by about 30 nesting pairs per year. In 1988, they even began nesting along the Minnesota River Valley in western Minnesota for the first time in over 100 years. However, no bald eagle nests were identified within 0.5 mile of the existing DM&E rail line during a survey in April, 1999.

American kestrels (*Falco sparverius*) are found in a variety of habitats including parks, suburbs, open fields, forest edges, alpine zones, and deserts. In addition to requiring open space for hunting, American kestrels seem to need perches from which to hunt, cavities for nesting, and sufficient food supply. In Minnesota they can be found in both urban and rural areas hunting along roadsides from telephone wires, trees, or hovering.

The barred owl (*Strix varia*) is a common species in Minnesota and is considered a woodland owl associated with floodplains, river bottoms and lake margins. Barred owls feed on a variety of prey, including rodents, squirrels, rabbits, birds, and crustaceans.

Burrowing owls occupy dry, short-grass prairies. A re-introduction program was started in 1985 and has continued to release young owls every summer since its inception. Young owls are trapped in South Dakota and are relocated to western Minnesota in hopes of reestablishing a breeding population.

The northern harrier (*Circus cyaneus*) is a grassland raptor, generally found in wet meadows where they nest and roost. The raptor is capable of taking a wide variety of prey from rodents to birds, insects, reptiles and amphibians. However, harriers most commonly depend on voles for food.

Peregrine falcons (*Falco peregrinus*) are birds of open spaces usually associated with high cliffs and bluffs overlooking rivers and coasts. Since the late 1970's peregrine falcons have been reintroduced in Minnesota. In 1992, in Olmsted County, a peregrine was reported nesting on the Mayo Clinic (MNHDB, 1998). However, no peregrines have returned to this site. Peregrines have been hacked (hatched and raised by hand) on cliffs along the Mississippi River, but none have returned to establish eyries (11/13/98 DNR mtg. notes).

In Minnesota, the red-tailed hawk (*Buteo jamaicensis*) is found around open fields especially near woodlots close to farms and cities where it usually inhabits grasslands or marsh-shrub habitats. Red-tailed hawks feed on a wide variety of prey.

The screech owl is a year round resident of the state inhabiting woodlands bordered with open fields and in urban areas. Screech owls will feed on a wide variety of prey, utilizing what is most common.

All raptor species are legally protected against shooting and capturing, and improvements have been made in habitat preservation. A raptor survey performed by PIC Technologies along the existing DM&E rail line was completed in April, 1999. The results of this survey may be found in Table 3.1-13.

Table 3.1-13
Raptor Nests within 0.5-mile of the Existing DM&E Rail Line - Minnesota [1]

Species [2]	1999 Status	County	Legal Location TWP RNG Sec 1/4 1/4 1/4	Nest Substrate	Surrounding Habitat	Topographic Quad
RT	active	Waseca	107N 22W 13 NE SE SW	tree	wetland	Meriden
BU	inactive	Waseca	107N 22W 14 NE SW SE	tree	wetland	Meriden
RT	active	Waseca	107N 22W 15 NW SW SE	tree	woodlot	Meriden
BU	inactive	Waseca	107N 22W 17 NE SE SE	tree	wetland	Meriden
BU	inactive	Waseca	107N 23W 05 NW NW SE	tree	woodrow	Waseca
RT	active	Waseca	108N 24W 32 NW NE SE	tree	woodlot	Janesville
BU	inactive	Blue Earth	108N 25W 15 NE SE NW	tree	riparian	Madison Lake
RT	active	Blue Earth	109N 26W 34 SE NW SE	tree	wetland	Mankato East
RT	active	Blue Earth	109N 26W 21 SW NE SW	tree	deciduous woodland	Mankato East
SW	occupied	Blue Earth	108N 27W 17 NE SE NE	tree	deciduous woodland	Mankato West
RT	active	Blue Earth	108N 28W 02 NW NE SW	tree	riparian	Judson
RT	occupied	Steele	107N 21W 15 SW NW NW	tree	cottonwood-riparian	Saco
BU	inactive	Steele	107N 21W 16 NE SE SW	tree	wetland	Saco
RT	active	Nicollet	109N 28W 32 NW NE SE	tree	cottonwood-riparian	Judson
BU	inactive	Winona, MN	107N 8W 11 NE NE SW	tree	deciduous woods	Rollingstone

Table 3.1-13
Raptor Nests within 0.5-mile of the Existing DM&E Rail Line - Minnesota [1]

Species [2]	1999 Status	County	Legal Location TWP RNG Sec 1/4 1/4 1/4	Nest Substrate	Surrounding Habitat	Topographic Quad
BU	inactive	Winona	106N 9W 15 SE SW NE	tree	rural cemetery woodlot	Utica
BU	unknown	Olmsted	106N 11W 17 SE SW SE	tree	agriculture-woodlot	Eyota
RT	occupied	Olmsted	107N 13W 32 SE NE NW	tree	agriculture-woodlot	Rochester
BU	inactive	Olmsted	107N 15W 26 SE SE SE	tree	residential	Douglas
BU	inactive	Dodge	107N 17W 31 NW SW NE	tree	agriculture-woodlot	Claremont
RT	active	Dodge	017N 17W 31 SW NW NW	tree	agriculture-woodlot	Claremont
RT	occupied	Steele	107N 21W 15 SW NW NW	tree	cottonwood-riparian	Saco
BU	inactive	Steele	107N 21W 16 NE SE SW	tree	wetland	Saco
RT	active	Waseca	107N 22W 13 NE SE SW	tree	wetland	Meriden
BU	inactive	Waseca	107N 22W 14 NE SW SE	tree	wetland	Meriden
RT	active	Waseca	107N 22W 15 NW SW SE	tree	woodlot	Meriden
BU	inactive	Waseca	107N 22W 17 NE SE SE	tree	wetland	Meriden
BU	inactive	Waseca	107N 23W 05 NW NW SE	tree	woodrow	Waseca
RT	active	Waseca	108N 24W 32 NW NE SE	tree	woodlot	Janesville
BU	inactive	Blue Earth	108N 25W 15 NE SE NW	tree	riparian	Madison Lake
RT	active	Blue Earth	109N 26W 34 SE NW SE	tree	wetland	Mankato East

Table 3.1-13
Raptor Nests within 0.5-mile of the Existing DM&E Rail Line - Minnesota [1]

Species [2]	1999 Status	County	Legal Location TWP RNG Sec 1/4 1/4 1/4	Nest Substrate	Surrounding Habitat	Topographic Quad
RT	active	Blue Earth	109N 26W 21 SW NE SW	tree	deciduous woodland	Mankato East
SW	occupied	Blue Earth	108N 27W 17 NE SE NE	tree	deciduous woodland	Mankato West
RT	active	Blue Earth	108N 28W 02 NW NE SW	tree	riparian	Judson
RT	active	Nicollet	109N 28W 32 NW NE SE	tree	cottonwood-riparian	Judson
RT	active	Brown	110N 31W 17 NE SE SW	tree	agriculture-woodlot	Essig
RT	active	Brown	110N 32W 26 SW SW NW	tree	agriculture-woodlot	Sleepy Eye
BU	unknown	Redwood	110N 33W 27 SE SE SE	tree	agriculture-woodlot	Evan
BU	inactive	Redwood	110N 33W 34 SE NE NW	tree	agriculture-woodlot	Evan
RT	active	Brown	109N 35W 25 NE NW NE	tree	cottonwood-riparian	Springfield
BU	inactive	Redwood	109N 36W 19 SW SW NW	tree	cottonwood-riparian	Sanborn
BU	unknown	Redwood	109N 37W 20 SE NW SE	tree	agriculture-woodlot	Lamberton
BU	inactive	Redwood	109N 38W 28 SE SE NW	tree	riparian	Walnut Grove
RT	occupied	Redwood	109N 38W 29 NW SW NW	tree	woodlot	Walnut Grove
BU	inactive	Redwood	109N 39W 24 SW SE SW	tree	riparian	Walnut Grove
BU	inactive	Redwood	109N 39W 27 NW NE NW	tree	woodlot	Tracy East
BU	inactive	Redwood	109N 39W 27 SW NW NW	tree	riparian	Tracy East

Table 3.1-13
Raptor Nests within 0.5-mile of the Existing DM&E Rail Line - Minnesota [1]

Species [2]	1999 Status	County	Legal Location TWP RNG Sec 1/4 1/4 1/4	Nest Substrate	Surrounding Habitat	Topographic Quad
BU	inactive	Lyon	109N 40W 22 SW SE SW	tree	rural cemetery woodrow	Tracy West
BU	inactive	Lyon	109N 42W 25 NE NE NW	tree	agriculture-woodlot	Balaton
BU	inactive	Lincoln	109N 46W 28 SW SE SW	tree	agriculture-woodlot	Elkton

Notes: [1] Survey conducted April 22-28, 1999.
[2] Raptor Species Abbreviations are: RT=red-tailed hawk, SW=Swainson's hawk, BU=unknown buteo. (PIC Technologies 1999)

3.1.8.3 Aquatics and Fisheries

The existing DM&E rail line in Minnesota crosses, and is in close proximity to numerous streams, rivers, and lakes that support a diversity of fish. Major rivers located within the project area include the Zumbro, Minnesota, Blue Earth, Cottonwood, Redwood, and Straight. Game fish found in these rivers include walleye (*Stizostedion canadense*), northern pike (*Esox lucius*), smallmouth bass (*Micropterus dolomieui*), black crappie (*Pomoxis nigromaculatus*), channel catfish (*Ictlurus punctatus*), and bluegill (*Lepomis macrochirus*). Other fish species occurring in the rivers include banded darter (*Etheostoma zonale*), fantail darter (*Etheostoma flabellare*), rainbow darter (*Etheostoma caeruleum*), shorthead redhorse (*Moxostoma macrolepidotum*), northern hog sucker (*Hypentelium nigricans*), silver minnow (*Hybognathus nuchalis*), pugnose minnow (*Notropis emiliae*), speckled chub (*Hybopsis aestivilis*), and silver chub (*Hybopsis storeriana*). In addition, brown (*Salmo truuta*), brook (*Salvelinus fontinalis*), and rainbow trout (*Salmo gairdneri*) occur in coldwater streams of southeastern and central Minnesota.

Lakes throughout the project area also support a diverse community of fish species. Game fish in area lakes include walleye, northern pike, largemouth bass (*Micropterus salmoides*), white crappie, bluegill, and yellow perch. Other species of fish occurring in lakes include emerald shiner (*Notropis atherinoides*), golden shiner (*Notemigonus crysoleucas*), spottail shiner (*Notropis hudsonius*), white sucker (*Catostomus commersoni*), banded killifish (*Fundulus diaphanus*), and drum (*Aplodinotus grunniens*).

Many of the project area waterways have been impacted by human activities. The diversity and number of fish species have declined as a result of pollution, agricultural activities, and water diversions for human activities. In addition, lakes have suffered from the impact of fertilizer and nutrient runoff from farms and urban centers in the project area. Accelerated eutrophication (increase in minerals and organic nutrients resulting in an increase in the growth of aquatic vegetation and a decrease in dissolved oxygen) has lowered oxygen levels and negatively affected fish and aquatic life in many lakes.

The existing DM&E rail line crosses both Flandreau and Spring Creek in Lincoln County. Both of these streams have known occurrences of the Federally endangered Topeka Shiner.

Minnesota has designated trout streams based on the water quality of the habitat in the watershed. Winona, Blue Earth, and Olmsted Counties have designated trout streams that are crossed by, or are in close vicinity to the DM&E rail line. In Winona County, the rail line crosses Garvin Brook eight times. In addition, Burns Valley and Gilmore Creeks are located within two miles of the rail line in Winona County. An unnamed trout stream crosses the rail line once in

Blue Earth County. In Olmsted County, Trout Run Creek runs parallel to the main rail line for approximately 0.75 miles northeast of Dover. Trout populations in many streams have increased as a result of habitat improvement projects. Most trout water is in public ownership or easements.

Many of the waterways located in the project area support a diversity of mussel species. The lakes and rivers of central and southern Minnesota contain varied aquatic habitats, including shallow and deep water habitats for mussels. The common mussels occurring in the Zumbro, Straight, Minnesota, and Blue Earth rivers are provided in Table 3.1-14.

Table 3.1-14
Common Mussel Species-Minnesota

RIVER	MUSSEL SPECIES
ZUMBRO	Floater (*Anodonta grandis grandis*) Fluted Shell (*Lasmigonia costata*) Creek Heelsplitter (*Lasmigona compressa*) Creek Heelsplitter (*Lasmigona compressa*) Black Sandshell (*Ligumia costata*) Strange Floater (*Strophitus undulatus*) Elktoe (*Alasmidonta marginata*)
STRAIGHT	Mucket (*Actinonaias ligamentina*) Spike (*Elliptio diatata*) Round Pigtoe (*Pleurobema coccineum*) Fat Mucket (*Lampsilis radiata siliquoidea*)
MINNESOTA	Ebony Shell (*Fusconaia ebena*) Yellow Sandshell (*Lampsilis teres teres*) Wartyback (*Quadrula nodulata*) Salamander Mussel (*Simpsonaias ambigua*) Threehorn (*Obliquaria reflexa*)
BLUE EARTH	Ebony Shell (*Fusconaia ebena*) Yellow Sandshell (*Lampsilis teres teres*) Wartyback (*Quadrula nodulata*) Salamander Mussel (*Simpsonaias ambigua*) Threehorn (*Obliquaria reflexa*)

MNDNR 1999

Many of the lakes in the project area also host healthy populations of mussels. Some of the common mussel species found in lakes throughout the project area include white heelsplitter (*Lasmigona complanta*), floater (*Anodonta grandis grandis*), paper floater (*Anodonta imbecilius*), and liliput shell (*Toxalasma truncata*).

The mussel populations found in these waterways are often affected by a variety of factors. Many of the river mussel populations have declined as a result of sedimentation problems, agricultural and industrial pollution, flood control practices, dam development, and general environmental degradation. Lake populations have been affected by a combination of agricultural and industrial pollution, sediment pollution, human encroachment, and general environmental degradation, resulting in populations that are at or near historic lows. In addition, several species have been listed as threatened or endangered by the USFWS and DNR. The listed mussel species identified by these agencies are discussed in detail in Section 3.1.8.4.

3.1.8.4 Endangered, Threatened, and Sensitive Species

Plants and animals can receive protection under the Endangered Species Act, 1973, by listing on the Federal list of endangered and threatened wildlife and plants. A species is listed depending on its status and the degree of threat it faces. An "endangered" species is one that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered in the foreseeable future. The USFWS also maintains a list of plants and animals native to the U.S. that are candidates or proposed for possible addition to the Federal list.[5] The U.S. Fish and Wildlife Service (USFWS) was consulted regarding endangered and threatened species in the proposed project area. The USFWS identified ten Federally-listed endangered or threatened wildlife and plant species that could potentially occur in the project area. These are the peregrine falcon (*Falco peregrinus*, delisted), Topeka shiner (*Notropis topeka*, endangered), Minnesota dwarf trout lily (*Erythronium propullans*, endangered), Higgin's eye pearly mussel (*Lampsilis higginsii*, endangered), Karner blue butterfly (*Lycaeides melissa samuelis*, endangered), prairie bush-clover (*Lespedeza leptostachya*, threatened), Leedy's roseroot (*Sedum integrifolium* ssp. *leedyi*, threatened), western prairie-fringed orchid (*Platanthera praeclara*, threatened), and bald eagle (*Haliaeetus leucocephalus*, threatened).

[5] Information on threatened and endangered species is available at: http://endangered.fws.gov/wildlife.html

The Minnesota Natural Heritage Program was contacted to obtain more specific information regarding these species. General descriptions of where the species may occur within the proposed project area are presented below. More detailed descriptions of the species, species habitat, and occurrences are presented in the Biological Assessment (Appendix K).

3.1.8.4.1 Peregrine Falcon

Peregrine falcons, formerly listed as Federally threatened but recently removed from listing, are birds of prey that usually inhabit remote areas of canyons, cliffs, and valleys along waterways where there is an abundance of waterfowl or other avian species. They are the fastest bird on record which allows the bird to hunt over a relatively large area. Peregrine falcons may pass near the existing rail line, assorted rail facilities, or proposed new construction alternatives during migration, but available information indicates their occurrence is infrequent and unpredictable (USFWS 1984). The Minnesota Natural Heritage Data Base (MNHDB) provided three historic records in the proposed project area, located in Winona and Olmsted counties. In 1928 and 1955 peregrines were observed nesting on Pleasant Ridge in Winona County. Pleasant Ridge is east of Winona and the proposed project area. In 1992, in Olmsted County, a peregrine was reported nesting on the Mayo Clinic (MNHDB 1998). However, no peregrines have returned to this site.

On August 25, 1999 the USFWS determined that the American peregrine falcon is no longer an endangered or threatened species pursuant to the Endangered Species Act of 1973. Information on the peregrine falcon is included in this document due to this recent downlisting (Federal Register 1999).

3.1.8.4.2 Topeka Shiner

The Topeka shiner is a member of the minnow family and inhabits clear, clean open pools near the headwaters of streams. Increased sedimentation, introduction of game fish, and accelerated eutrophication have contributed to their decline (Cross & Collins 1995, American Rivers 1997). The Topeka shiner has been found in Flandreau and Spring Creeks (Lincoln County) which are crossed by the existing DM&E rail line. The fish may also inhabit tributaries to these creeks. The MNHDB has a 1973 record of the species from Lincoln County approximately 1.0 mile from the DM&E existing right-of-way (MNHDB 1998).

3.1.8.4.3 Minnesota Dwarf Trout Lily

Minnesota dwarf trout lily occurs in woodland habitat adjoining floodplains. It is the only plant species known to be endemic to Minnesota. The plant occurs in Steele, Rice, and Goodhue counties. Most colonies of the Minnesota dwarf trout lily occur along a 7.5 mile stretch of the Straight and Cannon rivers near Faribault, Minnesota. This area is approximately 15 miles upstream of Owatonna, Minnesota.

3.1.8.4.4 Higgin's Eye Pearly Mussel

Higgin's eye pearly mussel is a freshwater mussel that inhabits areas of swift current, where it buries itself in mud-gravel bottoms (USFWS 1983). The mussel is found only in the Mississippi, St. Croix rivers, Wisconsin, and Rock rivers. It occurs in the Mississippi River (downstream from the Twin Cities) and some of its larger northern tributaries. Information from the MNHBD indicates Higgin's eye pearly mussels have not been collected in the proposed project area (MNHDB 1998).

3.1.8.4.5 Winged Maple Leaf Mussel

Winged maple leaf mussel is a fresh water mussel that is found on shallow gravel bars or riffles of medium to large clear-water rivers and streams. Increased siltation and chemical and agricultural pollution have contributed to the species decline. The mussel exists in the St. Croix River in Wisconsin. The population in the St. Croix appears to be very small and localized, occurring just below the St. Croix Dam (Hornbach et. al. 1996). This population is approximately 125 miles upstream of Winona, Minnesota.

3.1.8.4.6 Karner Blue Butterfly

Karner blue butterflies occupy oak barrens/savanna habitat where wild lupine (*Lupinus perennis)* grows. Wild lupine serves as host for several of the insect's larval stages. Occurrence of the plant is recognized as a requirement for occurrence of the butterfly. Loss of habitat due to the suppression of wildfires and urban development have been attributed to the decline of the species (USFWS, No Date-e; Mitchell & Carnes, No Date). The butterfly was recorded in the Whitewater Wildlife Management Area, Winona County. This area is approximately three miles from the existing DM&E rail line. In 1998, the Minnesota County Biological Survey (MCBS) surveyed DM&E's existing rail line in Minnesota. No federally listed species were found during the survey. Additionally, information provided from the MNHDB did not report wild lupine occurring in the proposed project area. Since no wild lupine was reported from either source, it is doubtful that Karner blue butterflies exist within the proposed project area.

3.1.8.4.7 Prairie Bush-clover

Prairie bush-clover inhabits dry open areas in glaciated regions of the state (Smith 1981). The plant grows in soils that are usually well drained. The largest populations of the plant occur in the southwestern part of the state in Brown, Dodge, Olmsted, and Redwood Counties (USFWS 1988b). The plant has been recorded as recently as 1997 in Dodge County within one mile of the existing rail line. In Brown County, the plant has been recorded from Cottonwood River Prairies within one mile of the existing rail line. The plant has also been recorded in Nicollet County. The MCBS inventoried the entire DM&E existing rail line in Minnesota (278 miles) for prairie fragments and rare features. Thirty-six total miles of prairie were identified. Prairie bush-clover was not found within the DM&E right-of-way during the 1998 survey (DNR 1999).

3.1.8.4.8 Leedy's Roseroot

Leedy's roseroot is a member of the stonecrop (plants with waxy leaves such as the common jade plant) family. It is found in four locations in Minnesota. All sites are found in drainages of the Root and Whitewater rivers at elevations between 900 and 1,240 feet. The plant has been recorded growing high on limestone cliffs along the Root River in Olmsted and Fillmore counties. No plants are located within the project area, since the plants are limited to cliffs and no suitable habitat is found within the proposed project area.

3.1.8.4.9 Western Prairie Fringed Orchid

The Western prairie fringed orchid is a perennial herb that occurs in a variety of communities such as borrow areas, abandoned fields, along roadways, calcareous (containing calcium) prairies, and sedge meadows. Decline in the species is due to several factors such as conversion of the plant's habitat to cropland, overgrazing, and drainage (Harrison 1989). The orchid was previously recorded in Dodge and Nicollet counties in Minnesota, although a search of the MNHDB did not result in any records of the Western prairie fringed orchid occurring in the proposed project area (MNHDB 1998). Additionally, a survey by the MCBS in 1998 along the existing DM&E rail line did not result in occurrences of the lily (MCBS 1999).

3.1.8.4.10 Bald Eagle

Bald eagles are large birds of prey that occur over much of North America. Critical for bald eagle reproductive success is their overwinter survival, which is dependent, in large part, on adequate food supplies (Steenhof 1978). Suitable wintering areas require an abundant and easily available food supply and cover for protection from the cold and short periods of severe weather. During winter, eagles continue to rely on fish for food, but also use waterfowl, scavenge for carrion, or catch small mammals. Thus, wintering eagles may spend considerable time away from water in search of food. At night, bald eagles will select areas offering protection from the wind and severe weather. These areas are often dense stands of trees where the topography helps afford protection from the elements. Additionally, roost sites may be used for many years. Disturbance of a roost may lead to abandonment of the site (Steenhof 1976, Hansen et. al. 1981, Keister 1981).

The bald eagle is a winter and nesting resident in the proposed project area. It is known to use lands adjacent to the project area for feeding, perching, and roosting. In Minnesota near the existing rail line, the MNHDB reported nesting bald eagles in Winona County in 1997 along the spillway in the Upper Mississippi River Wildlife and Fish Refuge, approximately 8 miles south of the City of Winona. Another report was recorded in 1994 along the Minnesota River north of Mankato in Nicollet County.

<u>Special Concern Wildlife</u>

Tables 3.1-15 and 3.1-16 list those species considered rare by the MNHDB in the vicinity of the existing DM&E railroad main line (MNHDB 1998).

Table 3.1-15
State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota

Common Name	Minnesota Status	Date Observed	USGS Topographic Map	County
Blanding's turtle	T	1989	Verdi	Lincoln
loggerhead shrike	T	1996	Byron	Lyon
wood turtle	T	1987	Dodge Center	Dodge

Table 3.1-15
State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota

Common Name	Minnesota Status	Date Observed	USGS Topographic Map	County
timber rattlesnake	T	1990	Winona East	Winona
cerulean warbler	SC	1993	Lewiston	Winona
acadian flycatcher	SC	1993	Lewiston	Winona
Blanding's turtle	T	1991	Marion	Olmsted
Blanding's turtle	T	1985	Marion	Olmsted
Blanding's turtle	T	1990	Simpson	Olmsted
Blanding's turtle	T	1988	Winona West	Winona
Blanding's turtle	T	1993	Winona West	Winona
burrowing owl	E	1979	Beauford	Blue Earth
loggerhead shrike	T	1985	Mankato West	Blue Earth
loggerhead shrike	T	1996	Mankato West	Blue Earth
loggerhead shrike	T	1994	Mankato West	Blue Earth
loggerhead shrike	T	1996	Judson	Blue Earth
cerulean warbler	SC	1993	Pickwick	Winona
acadian flycatcher	SC	1993	Pickwick	Winona
timber rattlesnake	T	1990	Winona East	Winona
cerulean warbler	SC	1993	Lewiston	Winona
acadian flycatcher	SC	1993	Lewiston	Winona
Blanding's turtle	T	1991	Marion	Olmsted
wood turtle	T	1979	Rochester	Olmsted

Table 3.1-15
State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota

Common Name	Minnesota Status	Date Observed	USGS Topographic Map	County
racer	SC	1990	Simpson	Olmsted
Blanding's turtle	T	1985	Marion	Olmsted
Blanding's turtle	T	1990	Simpson	Olmsted
cerulean warbler	SC	1996	Marion	Olmsted
smooth softshell	SC	1993	Winona West	Winona
Blanding's turtle	T	1988	Winona West	Winona
Blanding's turtle	T	1993	Winona West	Winona
Blanding's turtle	T	1990	Winona West	Winona
racer	SC	1975	Winona West	Winona
timber rattlesnake	T	1976	Winona West	Winona
Henslow's sparrow	E	1958	Winona West	Winona
cerulean warbler	SC	1993	Winona West	Winona
cerulean warbler	SC	1997	Judson	Nicollet
acadian flycatcher	SC	1997	Judson	Nicollet
wood turtle	T	1979	Rochester	Olmsted
loggerhead shrike	T	1996	Byron	Dodge
loggerhead shrike	T	1992	Byron	Olmsted
wood turtle	T	1990	Claremont	Dodge
wood turtle	T	1987	Dodge Center	Dodge
wood turtle	T	1989	Owatonna	Steele

Table 3.1-15 State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota				
Common Name	**Minnesota Status**	**Date Observed**	**USGS Topographic Map**	**County**
Blanding's turtle	T	1987	Verdi	Lincoln
burrowing owl	E	1976	Balaton	Lyon
Blanding's turtle	T	1989	Verdi	Lincoln
T=threatened, E=endangered, SC=special concern MNHDB 1998				

Table 3.1-16 State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota-by County		
Common Name	**Minnesota Status**	**Date Observed**
Winona County		
Henslow's sparrow	E	1996
smooth softshell	SC	1993
red-shouldered hawk	SC	1993
racer	SC	1996
timber rattlesnake	T	1998
least shrew	SC	1914
cerulean warbler	SC	1996
fox snake	NON	1993
acadian flycatcher	SC	1996
Blanding's turtle	T	1993
Western hognose snake	SC	1985

Table 3.1-16
State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota-by County

Common Name	Minnesota Status	Date Observed
Eastern hognose snake	NON	1994
milk snake	NON	1995
loggerhead shrike	T	1993
prairie vole	SC	1986
woodland vole	SC	1993
gopher snake	SC	1994
bullfrog	NON	1993
pickerel frog	NON	1993
Eastern spotted skunk	T	
Bell's vireo	NON	1993
Olmsted County		
Northern cricket frog	E	1939
smooth softshell	SC	1995
wood turtle	T	1993
racer	SC	1990
timber rattlesnake	T	1998
cerulean warbler	SC	1996
rat snake	SC	1968
fox snake	NON	1996
acadian flycatcher	SC	1996
Blanding's turtle	T	1996

Table 3.1-16
State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota-by County

Common Name	Minnesota Status	Date Observed
milk snake	NON	1996
loggerhead shrike	T	1996
pickerel frog	NON	1995
Louisiana waterthrush	SC	1996
Eastern spotted skunk	T	
Bell's vireo	NON	1974
Dodge County		
Northern cricket frog	E	1966
Henslow's sparrow	E	1998
upland sandpiper	NON	1956
wood turtle	T	1990
Blanding's turtle	T	1998
loggerhead shrike	T	1996
Eastern spotted skunk	T	
Steele County		
short-eared owl	SC	1994
wood turtle	T	1998
Blanding's turtle	T	1996
sandhill crane	NON	1996
bullfrog	NON	1993
smooth softshell	SC	1948

Table 3.1-16
State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota-by County

Common Name	Minnesota Status	Date Observed
Blue Earth County		
upland sandpiper	NON	1985
timber rattlesnake	T	1920
fox snake	NON	1994
Blanding's turtle	T	1993
milk snake	NON	1991
loggerhead shrike	T	1998
bullfrog	NON	1988
burrowing owl	E	1979
Eastern spotted skunk	T	1968
Brown County		
Henslow's sparrow	E	1998
upland sandpiper	NON	1986
cerulean warbler	SC	1998
Blanding's turtle	T	1989
loggerhead shrike	T	1998
marbled godwit	SC	1978
Wilson's phalarope	T	1998
Western harvest mouse	NON	1950

Table 3.1-16
State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota-by County

Common Name	Minnesota Status	Date Observed
Redwood County		
fox snake	NON	1979
five-lined skink	SC	1983
milk snake	NON	1944
loggerhead shrike	T	1986
Eastern spotted skunk	T	
Lyon County		
loggerhead shrike	T	1974
Northern grasshopper mouse	NON	1968
burrowing owl	E	1976
Lincoln County		
upland sandpiper	NON	1983
Blanding's turtle	T	1989
loggerhead shrike	T	1995
Northern grasshopper mouse	NON	1952
plains pocket mouse	SC	
Wilson's phalarope	T	1979
Nicollet County		
cerulean warbler	SC	1997
fox snake	NON	1986

Table 3.1-16 State Rare, Threatened, or Endangered Species in the Existing DM&E Corridor across Minnesota-by County		
Common Name	**Minnesota Status**	**Date Observed**
acadian flycatcher	SC	1997
milk snake	NON	1948
Eastern spotted skunk	T	1934
Le Sueur County		
upland sandpiper	NON	1997
racer	SC	1994
fox snake	NON	1994
acadian flycatcher	SC	1997
Blanding's turtle	T	1955
loggerhead shrike	T	1996
Western harvest mouse	NON	
T=threatened, E=endangered, SC=special concern, NON=species that are tracked that have no legal status, but they are rare and may become listed if they decline further. MNHDB 1998		

3.1.9 TRANSPORTATION

The major road transportation routes in the project area are mainly limited to state and U.S. roads and highways. However, there are two interstate highways within the project area. Interstate 35 is a north-south route that passes through western Owatonna, crossing over the existing DM&E rail line. Interstate 90 is an east-west route that runs generally two to three miles south of the existing DM&E rail line from Winona to Rochester. At Rochester, I-90 turns southward and then runs south of and parallel to the rail line at a distance of over 20 miles.

There are numerous state and U.S. highways in the project area. The main route is U.S. Highway 14 which is an east/west route. This highway nearly parallels the existing DM&E rail line throughout the entire project area and crosses it nine times. All of the remaining major U.S.

and state highway routes in the project area are north-south routes. The U.S. Highways in the project area include the US-52 (railroad underpass) and US-63 (grade crossing) in Rochester; the US-71 (railroad overpass) in Sanborn; US-169 (underpass) in Mankato; US-59 (grade crossing) in Garvin; and the US-75 (railroad underpass) in Lake Benton. The state routes (SR) in the project area include grade crossings of SR-56 in Dodge Center; SR-13 in Waseca; SR-15 in New Ulm; SR-4 in Sleepy Eye; and SR-91 and the SR-23 (railroad underpass) between Tyler and Lake Benton.

There is quite an extensive network of roads in the counties of the project area. For the most part, the roads are located along section lines. The basic structure of these roads are that of a grid throughout most of the project area. The existing rail line crosses 69 county roads grade in Minnesota. There are no Forest Service (USFS) or Bureau of Land Management (BLM) roads in the project area in Minnesota.

The existing DM&E rail line crosses approximately 164 private roads in Minnesota. These roads consist of driveways and farm roads (139 of the 164 private roads are farm roads). Farm roads would primarily be used by slow moving farm equipment, while both types of private roads would be used for a low number of personal vehicles.

The DM&E operates an existing rail line from Goodview, just north of Winona, eastward across southern Minnesota. It passes through the towns of Rochester, Owatonna, Waseca, Mankato, New Ulm, Springfield, Tyler, and numerous other small communities. The rail line continues across Minnesota and enters South Dakota approximately 4.5 miles west of Verdi. DM&E operates approximately three trains per day over the rail line plus several local wayfreights per day to serve local shippers. Table 3.1-9 provides rail traffic along the existing DM&E rail line.

Other rail lines in the project area include Union Pacific Railroad Company (UP), Burlington Northern/Santa Fe Railway Company (BNSF), Canadian Pacific Railway (CP), and I&M Rail Link (I&M). The UP and I&M both pass north-south through Owatonna. The UP rail line extends north through Faribault, Minnesota and south through Albert Lea, Minnesota. UP also owns the section of track through Owatonna over which DM&E operates. DM&E has unrestricted trackage rights to this section of track. However, DM&E is prohibited from connecting this track to the I&M rail link as part of the trackage rights agreement. The I&M rail link extends north to Faribault and south through Ramsey, Minnesota. Portions of this rail line are in poor condition. However, I&M is currently working to rehabilitate this rail line. I&M currently operates an average of less than one train per day on this rail line, operating approximately two to three trains per day, two days (Tuesday and Friday) a week. In Mankato, DM&E also operates on UP trackage through town. This UP rail line extends north to St. Paul, Minnesota and extends south through Worthington, Minnesota. UP currently operates approximately seven trains per day on this rail line, including coal trains hauling coal from the Powder River Basin of Wyoming, and is in the process of upgrading it. The BNSF rail line crosses DM&E's existing rail line just north of Florence, Minnesota. This rail line extends north through Marshall, Minnesota and southward through Pipestone, Minnesota. BNSF operates approximately 16 trains per day on this rail line. CP operates a rail line along the Mississippi River at the eastern end of the project area. They currently operate approximately 28 trains per day on this rail line. CP and DM&E both connect to UP in Winona. UP operates a section of rail line that allows rail access to barge facilities at Winona Harbor. UP provides switching for DM&E, CP and other rail carriers to and from the harbor.

There are several public airports in the project area. These include the Winona Municipal Airport Field in Winona County, Rochester Municipal Airport in Olmsted County, Dodge County Airport, Owatonna Airport in Steele County; Waseca Municipal Airport in Waseca County; Mankato Municipal Airport in Blue Earth, New Ulm and Springfield Municipal Airports in Brown County, Tracy Municipal Airport in Lyon County, and Tyler Municipal Airport in Lincoln County. Rochester Municipal Airport provides access for international patients to the Mayo Clinic. It has plans for runway expansion.

The existing DM&E rail line is in close proximity to or crosses three trails: the Douglas State Trail (Rochester), Sakatah Singing Hills State Trail (Mankato), and Red Jacket Trail (Mankato). More information on these trails may be found in Section 3.1.4.8 State Lands.

Barge transportation in the project area is provided at Winona Harbor on the Mississippi River. The harbor serves several hundred barges each season. The barge season in this part of Minnesota is approximately May to October. Grain and other agricultural products are the primary commodities shipped, and the harbor is equipped with facilities to efficiently load these materials. Limited amounts of other materials, including salt and coal, are off-loaded at the harbor. These are unloaded using a clam-shell crane. DM&E has no direct rail access to the barge loading facility in Winona. However, they interchange traffic with UP to deliver and receive goods transported by barge.

3.1.10 SAFETY

There are approximately 443 grade crossings along the existing DM&E rail line in Minnesota, 304 of which are public crossings. Of these, 26 are protected by flashing lights with gates, 63 are protected by flashing lights, and 215 are protected by crossbucks or crossbucks and stop signs. Most private roads are either not protected or protected by crossbucks only.

There were 44 observed accidents in the DM&E rail line grade crossings in Minnesota between 1993 and 1997.

The existing DM&E rail line in Minnesota passes through 23 school districts, and buses from the surrounding schools operate over the road systems in the project area. Many of the school districts do not own the school buses, but lease the transportation job to area busing companies. From east to west the potentially affected school districts, and the number and location of school bus crossings, are shown in Table 3.1-17. The Elkton School District has buses that cross the existing DM&E rail line as few as 8 times per day; while the Rochester School District has buses that cross the tracks as many as 373 times a day. In addition to regular buses for class attendance, the districts also provide buses for students attending various activities, such as sporting events and field trips.[6] Due to the irregularity of activity bus schedules and routes, these crossings are not included in the total crossings per day.

[6] All school districts were contacted on numerous occasions and given ample opportunity to respond with school bus crossing information; however, not all school districts responded.

Table 3.1-17
Minnesota School District Bus Crossings of the Existing DM&E Rail Line

School District	Street Name	Number of Bus Crossings/Day
Winona*		
Minnesota City Bus Co.	Stockton, MN	5
	County Road 23 (between Stockton and Minnesota City)	15
	County Road 23	2
	54th Street	21
	41st Street	1
	5th Street and Jackson	6
	6th Street	65
	7th Street and South Baker	9
	Gilmore and Sioux	15
	Grand and Belleview	5
	Huff and Belleview	11
	Main and Belleview	33
Suffrins Bus Co.	Vine and Belleview	1
Phillips Bus Co.	Mankato and Belleview	2
Lewiston-Altura	County Road 23	4
	County Road 33	4
	County Road 25	5
	County Road 29	32
St. Charles		
Nachtweih Transportation	Highway 74/Whitewater Ave.	10
	Highway Co. 37 S	4
	Winona Co. Line Rd.	1
	Highway 10	2
	Highway 126/11th Street	2
	Center Street	2
Pagel Bus Co.	Township 13 South	4
	Highway 74/Whitewater Ave.	4
	County Road 37	4

Table 3.1-17
Minnesota School District Bus Crossings of the Existing DM&E Rail Line

School District	Street Name	Number of Bus Crossings/Day
Dover-Eyota[1]	CR 119/Chester Avenue, SE CR 102 (1000-1500 blocks) CR 102 (1500-1600 blocks) CR 7 Center Street 19th Avenue SR 74/Whitewater Avenue	5 2 4 15 17 2 2
Rochester	7th Street, NW 11th Avenue, NW 6th Avenue, NW 4th Avenue, NW Broadway Civic Center Drive/2nd Avenue, NE 9th Avenue, NE 11th Avenue, NE 15th Avenue, NE East Circle Drive County Road 9 SE County Road 11 SE TWP 211/10th Street at 60th Avenue County 119/Chester Avenue, SE	11 60 19 33 4 41 15 82 11 63 11 7 1 15
Byron	County Road 5 9th Avenue, NW 19th Avenue, NW 10th Avenue, NE	42 4 4 6
Kasson-Mantorville	Mantorville Avenue 1st Street, SW 3rd Avenue, SW 8th Avenue, SW South County Road 9	32 1 1 4 4

Table 3.1-17
Minnesota School District Bus Crossings of the Existing DM&E Rail Line

School District	Street Name	Number of Bus Crossings/Day
Triton	County Road 1	8
	County Road H	4
	Highway 56	2
	County Road 3	4
Owatonna		
Owatonna Bus Co., Inc.	County Road 18	5
	County Road 17	4
	NW 24th Avenue	4
	Park Drive	138
	State Avenue	3
	Cedar Street	9
	N. Elm Street	5
	Pine Street	104
	Chestnut Street	5
	Vine Street	4
	Rice Lake Street	13
	SE 34th Avenue	2
	SE 44th Avenue	4
	E US Highway 14	3
	SE 64th Avenue	2
	SW 28th Street	4
	SE 74th Avenue	2
	SE 84th Avenue	4
Waseca		
Clemens Bus Co.		
Lenz Bus Service, Inc.	4th Street, SW	9
	South State Street	9
	5th Street, SE	9
	8th Street, SE	9

Table 3.1-17
Minnesota School District Bus Crossings of the Existing DM&E Rail Line

School District	Street Name	Number of Bus Crossings/Day
Janesville		
Prail Bus Service	Main Street	15
	73rd Street	4
	60th Street	4
	50th Street	4
	35th Street	4
Weibold	Mott Street	2
	Blue Earth County Road 184	4
	Blue Earth County Road 14	4
	Waseca County Road 35	2
	Main Street	6
Palmer	Teal Street	7
	Skookum	6
	Waseca County Road 3	8
Mankato		
Manske Bus Service	County Road 17	11
	County Road 3	15
	County Road 12	22
	Township 305	3
	Township 273	3
	County Road 5	6
Palmer	North Agency Street	3
	County Road 17	1
	County Road 185	2
	Township Road 325	3
Lake Crystal		
Lake Crystal		
Champlan	No crossings	

Table 3.1-17 Minnesota School District Bus Crossings of the Existing DM&E Rail Line		
School District	**Street Name**	**Number of Bus Crossings/Day**
New Ulm		
New Ulm Bus Lines, Inc.	20th North	9
	20th South	14
	17th North	6
	in Essig	7
	23rd North	1
	in Cambria	4
	Blue Earth County Road	4
	12th South	12
	Shag Road	4
	16th South	4
	2nd North	2
	3rd South	3
	19th North	1
	7th South	2
	3rd North	1
Sleepy Eye	N/A	N/A
Springfield	Highway 258	2
	County Road 5	6
	County Road 3	4
Red Rock Central	Main Street in Lamberton	4
	County Road 6	4
	Revere	2
	Main Street in Sanborn	4
Westbrook-Walnut Grove	Highway 14/County Road 7	10
	Main Street in Revere	2

Table 3.1-17
Minnesota School District Bus Crossings of the Existing DM&E Rail Line

School District	Street Name	Number of Bus Crossings/Day
Tracy	Custer Township, Lyon County	2
	Lyon Co Road 14	10
	Lyon Co Road	15
	South 4th Street	30
	Center Street	15
	Springdale Township, Redwood County	2
	County Road 5	4
	County Road 105	4
Balaton	Highway 59	2
	County Road 7	2
	County Road 5	2
	Township Road	4
	Highway 91	4
Russel-Tyler-Rufton		
Bruce Bartman	Main Street in Tyler	32
Leon Sand	Unnamed Street	2
	County Road 13	2
Lake Benton	Unnamed streets	10
Elkton[2]	Junction of County Roads 9 and 2	4
	Unnamed street	4

* Includes crossings of the CP line in Winona.
[1] Other information was given on crossings not on DM&E's mainline expected to experience increased traffic.
[2] Elkton School District is located in South Dakota; however, busses run into Minnesota for student pick-ups.

3.1.11 HAZARDOUS MATERIALS

Transportation of Hazardous Materials

During 1997 and 1998, DM&E transported a variety of hazardous materials, many of which are associated with rural agricultural activities. Hazardous materials transported included liquefied petroleum gas (LPG), anhydrous ammonia, phosphoric acid, ferric chloride, fuel oil, and ethylene acetyl (flammable gas). DM&E currently transports approximately 200-250 carloads of these materials, per year, throughout their system. The majority of the carloads contain LPG, phosphoric acid, and anhydrous ammonia. DM&E operates no key trains.[7]

Hazardous Waste Sites

Railroads transport and utilize a wide variety of hazardous materials. Additionally, they pass through developed, often highly industrialized areas where hazardous materials are stored and used. DM&E is no exception, however, the amount of industrial activity along the existing rail line is limited. The presence of hazardous materials introduces the opportunity for contamination, either from improper handling, spills, or accidents. While required precautions may already be implemented, past incidents could have resulted in contamination. Contamination may be the result of railroad or other, non-railroad related activities adjacent to the rail line. Such contamination may not currently pose a problem or risk. However, construction activities in or through contaminated areas can expose contaminants to the environment and result in negative impacts. Therefore, appropriate precautions are required to work in such areas.

A records review of various federal and state databases was conducted to identify areas of potential contamination within the project area. Sites within 1.0 mile of the existing rail line and new construction alternatives were considered to be in the project area. Databases reviewed included:

- Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
- EPA National Priorities List (NPL)

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[7] Any train with five or more tank carloads of chemicals classified as a Poison Inhalation Hazard (PIH), or with a total of 20 rail cars with any combination of PIHs, flammable gases, explosives, or environmentally sensitive chemicals.

- EPA Resource Conservation and Recovery Information System (RCRIS) Permitted Treatment, Storage and Disposal Facilities (TSD)
- EPA Resource Conservation and Recovery Information System (RCRIS) including RCRIS Large Quantity Generators (LQG)
- EPA Resource Conservation and Recovery Information System (RCRIS) including RCRIS Small Quantity Generators (SQG)
- EPA Emergency Response Notification System - 1999 (ERNS)
- EPA Corrective Action Reports (CORRACTS)
- Minnesota Leaking Underground Storage Tanks (LUST)
- Minnesota State Hazardous Waste Sites (SHWS)
- Minnesota Underground Storage Tanks (UST)
- Minnesota Solid Waste Facilities/Landfill (LF).

The results of the review[8] are discussed below.

Also known as Superfund, NPL database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA. The database was searched to a one-mile radius from the DM&E rail alignment. One NPL site, the LeHillier/Mankato Site near Sibley Park was identified by the database. This site is located less than 1.0 mile north of the existing DM&E rail line.

CERCLIS contains data on potentially hazardous waste sites that have been reported to the EPA by states, municipalities, private companies, and private persons, pursuant to §103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to be or are on the NPL, and sites which are in the screening and assessment phase for possible inclusion on the NPL.

As of July 1, 1999, ninety-eight (98) CERCLIS sites were located in Minnesota. In addition to the LeHillier/Mankato Site which is listed on the NPL, two other CERCLIS sites are located within 1.0 mile of the existing DM&E rail line. These two CERCLIS sites are the New Ulm Gas Manufacturing Site, in New Ulm, Minnesota and the Owatonna Gas Manufacturing Site in Owatonna, Minnesota.

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[8] As of October, 1999

CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. CERCLIS - NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action of NPL consideration. In the latter case, other regulatory mechanisms such as RCRA Corrective Action or remediation under the auspices of a state-approved program may be used to address contamination on the property. The database was searched to include a band 1.0-mile on either side of the existing DM&E rail line. Three CERCLIS-NFRAP sites were identified by the database search:

- The Claremont Abandoned Pesticide Site, Claremont, Minnesota;
- West Broadway Street Groundwater Contamination Site, Owatonna, Minnesota; and
- E.F. Johnson Company, Inc., Waseca, Minnesota.

The Minnesota Pollution Control Agency is responsible for directing the remediation of each of these three sites.

SHWS records are the state's equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds are identified, as well as sites where the cleanup will be paid for by potentially responsible parties. The data is provided by the Minnesota Pollution Control Agency. The database was searched to 1.0 mile on each side of the existing DM&E rail line. Three SHWS sites were identified:

- The Claremont Abandoned Pesticide Site, Claremont, Minnesota;
- West Broadway Street Groundwater Contamination Site, Owatonna, Minnesota; and
- E.F. Johnson Company, Inc., Waseca, Minnesota.

RCRIS database includes selected information on facilities that generate, store, treat, or dispose of hazardous waste as defined by the RCRA. The source of this database is the U.S. EPA. No RCRA Treatment, Storage and Disposal Facilities (TSDFs) are located within 1.0 mile of the existing DM&E rail line.

The Solid Waste Facilities/Landfill Sites (SWF/LF) records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data comes from the Minnesota Department of Environment and Natural Resources Protection Agency's Licensed

Solid Waste Facilities list. The database was searched to a 0.5-mile radius of the existing DM&E rail line. No SWF/LF sites were identified.

Leaking Underground Storage Tank (LUST) incident reports contain an inventory of reported LUST incidents. The data comes from the Minnesota Pollution Control Agency. The database was searched to 0.5-mile radius of the existing DM&E rail line. Table 3.1-18 provides a compilation of the number of LUST sites by county along the existing DM&E rail line.

Table 3.1-18
LUST Sites-Minnesota

COUNTY	NUMBER OF LUST SITES WITHIN 0.5-MILE OF THE EXISTING DM&E RAIL LINE
Winona	4
Olmsted	6
Dodge	2
Steele	3
Waseca	3
Blue Earth	7
Brown	4
Redwood	1
Lyon	1
Lincoln	0

UST database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data comes from the Minnesota Pollution Control Agency. The database was searched to a 0.5-mile radius of the existing DM&E rail line. Over 125 underground storage tank (UST) sites were identified. Thirty-one UST sites are located within a 0.25-mile radius of the existing DM&E rail line.

ERNS is a national database that stores information on releases of oil and hazardous substances. The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended - Section 103; Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) - Section 304; The Federal Water Pollution Control Act (Clean Water Act) - Section 311; and The National Oil and Hazardous Substance Pollution Contingency Plan (NCP) - Sections 300.51 and 300.65 have release notification requirements that are supported by ERNS. The ERNS database was searched along the existing DM&E rail line only. Table 3.1-19 provides additional information on the ERNS sites identified.

Table 3.1-19
Railroad-Related ERNS Sites-Minnesota

County	City	Railroad	Date	Materials
Winona	Stockton	DM&E	03/01/96	Wood chips, flour, cabinet boards, clay, lumber
Winona	Stockton	DM&E	08/21/96	Clay and Wheat
Winona	Minnesota City	DM&E	07/28/98	Bagged flour, Coiled steel, coal
Olmsted	Rochester	DM&E	10/08/94	4 derailed cars - no hazardous materials
Dodge	Dodge Center	DM&E	01/07/95	Vehicle vs. Train - no cars derailed
Dodge	Dodge Center	DM&E	01/06/95	Vehicle vs. Train - no cars derailed
Steele	Hope	UP	03/21/91	Vehicle vs. Train - no cars derailed
Steele	Ellendale	UP	12/30/96	Vehicle vs. Train - no cars derailed
Steele	Owatonna	UP	12/30/97	Vehicle vs. Train - no cars derailed
Steele	Owatonna	UP	09/09/98	Vehicle vs. Train - no cars derailed
Steele	Ellendale	UP	01/09/99	Vehicle vs. Train - no cars derailed
Steele	Owatonna	UP	04/07/99	Vehicle vs. Train - no cars derailed
Steele	Hope	UP	06/09/99	Vehicle vs. Train - no cars derailed
Waseca	Waseca	DM&E	04/02/99	Yard train accident
Blue Earth	Lake Crystal	UP	01/29/96	Vehicle vs. Train - no cars derailed

Table 3.1-19 Railroad-Related ERNS Sites-Minnesota				
County	**City**	**Railroad**	**Date**	**Materials**
Blue Earth	Eagle Lake	DM&E	03/19/96	Vehicle vs. Train - no cars derailed
Blue Earth	Lime Siding	DM&E	04/09/97	9 cars derailed - no hazardous materials
Blue Earth	Mankato	UP	01/10/99	Vehicle vs. Train - no cars derailed
Brown	Brookings	DM&E	10/15/92	9 cars derailed - no hazardous materials
Brown	Brookings	DM&E	12/22/97	7 cars derailed - no hazardous materials
Lyon	Russell	BN	07/22/92	23 cars derailed - no hazardous materials
Lyon	Tracy	DM&E	04/09/95	11 cars derailed - no hazardous materials
Lincoln	Lake Bent	DM&E	12/21/96	13 cars derailed - no hazardous materials
Lincoln	Balaton	DM&E	06/16/98	16 cars derailed including two locomotives

CORRACTS is a list of RCRA facilities with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every facility that has had corrective action activity. This database was searched to a 1.0-mile radius of the subject property. No RCRA CORRACTS sites were identified.

3.1.12 ENERGY RESOURCES

Transportation of Energy Resources

During 1997 and 1998, DM&E transported a variety of energy resources. Many of these are associated with rural agricultural activities and are not transported in large quantities. Energy resources transported primarily consist of LPG. Occasionally and irregularly, fuel oil may be transported. However, less than 10 carloads annually would typically be moved. Additionally, DM&E provides rail transportation of coal to the electrical generation plant operated by Rochester Utilities in Rochester, Minnesota.

Utilization of Energy Resources

DM&E currently transports approximately 60,000 carloads of materials annually. The operating limit for each rail car is approximately 263,000 pounds. As discussed in Chapter 1, this is below the present industry standard of 286,000 pounds per carload. However, based on the weight of a rail car (approximately 60,000 pounds) and a loaded truck's capacity of approximately 60,000 pounds, each rail car (capacity of approximately 260,000 pounds) is the equivalent of approximately 4 trucks. Based on a fuel efficiency study performed by Abacus Technology (1991) for the U.S. Department of Transportation, Federal Railroad Administration (FRA), rail achieved from 1.4 to 9 times more ton-miles per gallon than competing truckload service. Rail fuel efficiency ranged from 196 to 1,179 ton-miles per gallon while truck fuel efficiency ranged from 84 to 167 ton-miles per gallon. Factors which influence fuel efficiency in rail transport include track grade and curvature, train resistance, cargo weight, horsepower per trailing ton, design of rail car, and average speed. Generally, higher speeds adversely affect fuel efficiency. In the referenced study, the highest level of ton-miles per gallon were achieved by rail mixed freight trains using an average speed of 37 miles per hour. The ability of DM&E to provide transportation of goods for its existing shippers contributes to the efficient utilization of fuel. Additionally, DM&E transports a variety of energy resources as mentioned above. Rail transportation of these resources increases the efficiency of their usage by reducing the energy required to provide these resources to the end user.

Recyclable Commodities

The recyclable commodities currently transported by DM&E in Minnesota are limited to paper and scrap steel. DM&E delivers printing paper to Brown Printing in Waseca and ships scrap paper from this facility for recycling. Approximately 30-40 boxcars of scrap paper are shipped each month. Scrap steel is shipped on DM&E by scrap iron dealers. It is shipped to mills for reuse. In Minnesota, approximately 300 carloads per year of scrap steel would typically be shipped.

3.1.13 CULTURAL RESOURCES[9]

Humans first occupied the Great Plains of North America and the area of the proposed project some 13,000 years ago. The cultures occupying the Plains over the millennia can be classified into four categories; (1) nomadic hunter/gatherer, (2) nomadic foragers, (3) semi-sedentary villagers and (4) sedentary villagers.

The most common culture on the Plains was that of the nomadic hunter/gatherer. They generally hunted large game animals, and supplemented their subsistence with small mammals, fish, and wild plants. The hunter/gatherer lifestyle persisted on the Plains from the earliest times into the Historic Period (1650 AD to present).

The least common culture on the Plains was that of the nomadic foragers who primarily hunted small game and gathered fruits and wild plants. On occasion, they supplemented their diet with large game such as bear and deer. This lifestyle was practiced by some people up to historic times.

Semi-sedentary villagers appeared on the Plains around 1 AD. Their subsistence pattern included hunting and gathering supplemented by gardening. The practice of gardening required that, for at least a part of the year, the semi-sedentary villagers stayed in one general area; during the remainder of the year they were nomadic.

Sedentary villagers were groups whose diet consisted of roughly equal portions of agricultural products and hunting and gathering. These people lived in permanent villages which were normally located in forested river valleys. They would periodically venture onto the Plains to hunt, gather, and obtain other resources. This lifestyle appeared in limited areas on the Plains around 900 AD and continued until historic times.

The cultural chronology of the northern Plains, as determined by archaeologists, is almost exclusively derived from radiocarbon dating techniques. As a general rule, one cultural period ends where another period begins. However, in reality one cultural period declines while another develops, producing some overlap.

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[9] A cultural resource is any prehistoric or historic district, site, building, structure, or object in American history, architecture, engineering, archaeology, or culture. This term includes artifacts, records, and remains that are related to and located within such properties. The term also includes properties of traditional religious and cultural importance to an Indian Tribe that may meet the National Register criteria.

The cultural history of Minnesota presented in this document provides a brief look at the extensive cultural history within the project area. It is not intended to be a full, comprehensive, and detailed look at the culture history of the area. It is only intended to give some context to the known resources and cultures that may be affected by this project. A short discussion concerning consultation with the Native American Tribes known to have occupied the project area is also included. Table 3.1-20 summarizes the cultural history prepared by Scott F. Anfinson for southwestern Minnesota, Clark A. Dobbs' *Outline of Historic Contexts for the Prehistoric Period (ca. 12,000 BP – AD 1700)*, and a Plains culture history prepared by Richard Fox and Linea Sundstrom in an unpublished cultural resource management report (*Results of the 1999 Phase I & II Cultural Resource Evaluation for the Dakota Minnesota and Eastern Corporation's Proposed Powder River Basin Expansion Project in South Dakota and Wyoming,* 1999). Included is the controversial pre-Clovis period.

Table 3.1-20
Cultural Chronology of Minnesota

Period	Dates	Distinguishing Traits
Pre-Clovis	11,200 Before Present (BP)	Evidence could include hearths, food processing areas, kill sites and open campsites. Technology may include stone flake and chopper or bone and wooden tools.
Paleoindian	11,500 to 8,000 Before Present (BP)	Generally recognized in the archaeological record as distinctive. Projectile point types include both fluted and lanceolate points such as Clovis, Folsom, Goshen, Hell Gap, Agate Basin, Scottsbluff, Eden, Alberta, Cody, Plainview Frederick and Dalton (Meserve). Their subsistence is believed to have relied upon hunting of megafauna (Mammoth, Bison antiquitus, etc.), which was later replaced by modern bison.
Archaic	8,000 to 2,500 BP	Indication of changes in subsistence strategies with a greater reliance on small game and wild plants to supplement large fauna. However, bison hunting remained a focal point. Side-notched projectile points along with choppers ovate and triangular bifaces, end scrapers and milling stones can be expected. With its diverse bionomes, the Minnesota Archaic includes Shield Archaic, Lake-Forest Archaic, Prairie Archaic and Eastern Archaic. For this project, only the Prairie Archaic and portions of the Eastern Archaic are considered.

Table 3.1-20
Cultural Chronology of Minnesota

Period	Dates	Distinguishing Traits
Woodland	3,000 BP to AD 900/1650	Some overlap with the Archaic occurs across the project area. There are differences in the climatic zones and therefore differences among the cultures that developed. Those in eastern Minnesota differ from the cultures observed in western Minnesota. Pottery, corner-notched projectile points and burial mounds have been found. Semi-sedentary lifestyle and domesticated crops are seen as early as AD 250. In southwestern Minnesota three named cultural phases, Mountain Lake, Fox Lake and Lake Benton, are all recognized and the term Middle Prehistoric is used. The Woodland tradition in eastern Minnesota more closely resembles the Woodland traditions from the south and east with emphasis on mortuary ceremonialism and a wide variety of ceramics.
Late Prehistoric	AD 900 to AD 1650	Includes the Plains Village and Mississippian periods. Changes in the ceramics that differ greatly from Woodland ceramics can be seen and there is a new subsistence-settlement pattern focused on horticulture (gardening) and rivers. New cultural orientations also appeared and are known as Oneota and Plains Village.
Plains Village	AD 900 to AD 1300	Includes the Middle Missouri Tradition and has been divided into three variants: Initial, Extended and Terminal. Initial variant contains Over, Mill Creek, Great Oasis and Cambria Phases.
Mississippian (Oneota)	AD 900 to AD 1650	Oneota is a widespread manifestation associated with the Mississippian period. Oneota peoples are linked to Siouan speakers such as the Ioway, Oto, Missouri, Winnebago, Osage and Kansa.
Historic	AD 1650 to Present	Fur trading posts, military camps as well as the remains of trails can be indicators of early commercial exploitation and military presence. Dugouts, foundations, cabins, outbuildings, cellars, fencing, wells, trails, or family graves may be other indicators of historic archaeological sites. Historic Native American sites may be difficult to detect in the archaeological record but there are ethnographic accounts that give the location of such sites and the presence of EuroAmerican trade goods should allow more precise identification. There may also be Native American sites that more closely resemble EuroAmerican dwellings and these may be at best difficult to impossible to identify from the archaeological evidence.

The above culture history is derived from the cultural history prepared by Scott F. Anfinson for southwestern Minnesota, Clark A. Dobbs *Outline of Historic Contexts for the Prehistoric Period (ca. 12,000 BP - AD 1700)*, and a Plains culture history prepared by Richard Fox and Linea Sundstrom in an unpublished cultural resource management report *(Results of the 1999 Phase I & II Cultural Resource Evaluation for the Dakota Minnesota and Eastern Corporation's Proposed Powder River Basin Expansion Project in South Dakota and Wyoming*, 1999)

Cultural resource areas found throughout the project area have the potential to be affected by the proposed project. The project has two distinct parts generally described as; (1) the portion of the proposed project that will involve reconstruction of the existing rail line, and (2) the portion of the proposed project that will involve new construction where rail lines currently do not exist. The Area of Potential Effect [10](APE) differs for each of these parts. The APE for each is discussed below:

APE for Reconstruction

1. The existing DM&E right-of-way.
2. Any newly acquired right-of-way needed for cut and fill.
3. Any newly acquired right-of-way for a proposed new connecting track near Owatonna, Minnesota.
4. Existing rail corridor and any newly acquired right-of-way required for new DM&E rail line through Mankato, Minnesota.
5. All lateral areas, borrow areas, haul roads (new or upgraded), staging areas, and other ancillary areas related to the proposed project.
6. Any newly acquired right-of-way for proposed yards or sidings.
7. That area outside the construction or ground disturbance right-of-way where there is the potential for the undertaking to have an adverse effect on historic properties, as defined in 36 CFR 800.5[11]. Identification of these areas will include consultation with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO)/cultural resource representatives designated by the Tribes, other identified consulting parties, and Federal agencies.

[10] Area of potential effects means the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

[11] An adverse effect is found when an undertaking may alter, directly or indirectly, the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonable foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

APE for New Construction

1. The construction right-of-way to include a 20-foot buffer on either side of the fenced construction right-of-way along the entire new construction route (ground disturbance area).
2. All lateral areas, borrow areas, haul roads (new or upgraded), staging areas, and other ancillary areas related to the proposed project.
3. That area outside the construction or ground disturbance right-of-way where there is the potential for the undertaking to have an adverse effect on historic properties. Identification of these areas will include consultation with the SHPO, THPO/cultural resource representatives designated by the Tribes, other identified consulting parties, and Federal agencies.

Based on the records search of files at the Minnesota Historic Society office, 14 archaeological sites have been identified in or immediately adjacent to the existing railroad right-of-way (Table 3.1-21). All of these sites are prehistoric, with components of the Archaic, Woodland, Mississippian, and Village Tradition stages. However, most of the sites have unknown prehistoric components. Two sites 21LN0013, a habitation and burial site containing both prehistoric and historic artifacts and 21RW0026 a prehistoric habitation site appear to abut the right-of-way but no evidence of the sites has been found in the right-of-way. Site 21LN0013 is listed as eligible for the National Register Historic Places (NRHP) while site 21RE0026 is on the NRHP. There are also 18 "Site Leads"[12] which do not have site numbers, but are assigned letters. Some of the site leads have information about their type but others do not. The site leads are listed since it is possible that these potential archaeological sites may exist within the DM&E right-of-way (Table 3.1-22).

The railroad right-of-way bisects the boundaries of three sites (21BE0066, 21BW0004, and 21OL0011). The most significant of these sites is the Brian site (21BW0004), a mound complex located just southeast of New Ulm, Minnesota. Site 21BW0004 has intact components within the right-of-way. The other two sites bisected by the railroad right-of-way are the Wussow site (21BE0066), a lithic scatter, and the Sand Bank site (21OL0011), an unnamed habitation site. The Wussow site dates to the Woodland stage, but the cultural affiliation of the Sand Bank site is unassigned. No evidence of either site was observed in the rail right-of-way. The remaining 11

[12] Site leads in Minnesota are areas where it is suspected that a site exists but no on-the-ground confirmation is available. They may or may not exist and the minimum area depicted on the Minnesota Historical Society maps is 0.25 of a square mile and many times includes one square mile.

sites are plotted in the general vicinity of the project area, but further investigation indicated that none of these sites still exist within the railroad right-of-way or the portion of the site that may have been in the right-of-way has been destroyed. It is possible that a portion of some of the sites did exist within the right-of-way but those portions have long since been destroyed by the original construction of the railroad in the late 19th and early 20th centuries.

There are 390 bridges and culverts (108 open deck pile bridges, 76 steel bridges, 18 stone arch bridges, 178 stone culverts, 3 concrete culverts, 2 cast iron culverts, and 3 misc. bridge designs) on the existing rail line in Minnesota. Five buildings, including three depots, two of which are listed in the NRHP and one which is recommended eligible, are also located along the existing rail line. The remaining buildings, a grain storage building, at milepost (MP) No. 253.7, and a freight house are recommended eligible for listing in the NRHP. There are 92 bridges and 180 culverts that are recommended eligible for the NRHP. The portion of the existing rail line that is included in the project area from Winona, Minnesota to Wall, South Dakota appears to be eligible for listing in the NRHP as a linear historic district (Appendix N).

Table 3.1-21
Known Archaeological Sites Abutting or in the Existing Right-of-Way in Minnesota

Site Number	Site Name	Site Type	Cultural Affiliation	In ROW	Abut ROW	National Register Eligibility	Other Comments
21BE0002	Cambria	Village	Cambria	X		Eligible	Portions intact in ROW
21BE0036	Price	Village	Cambria	X		Eligible	Destroyed in ROW
21BE0066	Wussow	Lithic Scatter	Woodland	X		Unevaluated	Destroyed in ROW
21BE0067	Rose	Lithic Scatter	Unassigned Prehistoric		X	Unevaluated	Destroyed in ROW
21BE0146	Winkler	Lithic Scatter	Unassigned Prehistoric		X	Unevaluated	Destroyed in ROW
21BE0161	Abbas	Lithic Scatter	Unassigned Prehistoric		X	Unevaluated	Not in ROW

Table 3.1-21
Known Archaeological Sites Abutting or in the Existing Right-of-Way in Minnesota

Site Number	Site Name	Site Type	Cultural Affiliation	In ROW	Abut ROW	National Register Eligibility	Other Comments
21BW0004	Brian	Mound	Unassigned Prehistoric	X		Recommend Eligible	Portions intact in ROW
21BW0043	Kraft	Habitation	Unassigned Prehistoric		X	Unevaluated	Destroyed in ROW
21OL0011	Sand Bank	Habitation	Unassigned Prehistoric	X		Unevaluated	Not in ROW
21WE0005	Benson Arnoldt	Lithic Scatter	Unassigned Prehistoric		X	Unevaluated	Destroyed in ROW
21WE0006	Schweim	Habitation	Archaic, Middle Woodland, Late Woodland, Cambria, Oneota		X	Unevaluated	Destroyed in ROW
21WE0007	Krienke	Lithic Scatter	Unassigned Prehistoric		X	Unevaluated	Not in ROW
21WE0023	Loon Creek	Lithic Scatter	Unassigned Prehistoric		X	Unevaluated	Destroyed in ROW
21WN0038	Rheinland	Lithic Scatter	Unknown Prehistoric		X	Unevaluated	Destroyed in ROW

Table 3.1-22
"Sites Leads" Abutting or in the Existing DM&E Right-of-Way

Site Number	Cultural Affiliation	Site	NRHP Significance	IN ROW	Abut ROW
21BEap	??	??	Unknown	X	
21BEav	Historic	sod fort	Unknown		X
21BEaw	Historic	Ghost town	Unknown	X	
21BEbo	Historic	Am. Fur Trading Post	Unknown		X

Table 3.1-22 "Sites Leads" Abutting or in the Existing DM&E Right-of-Way					
Site Number	**Cultural Affiliation**	**Site**	**NRHP Significance**	**IN ROW**	**Abut ROW**
21BEbq	Prehistoric	Unknown	Unknown		X
21BEbs	Prehistoric	Unknown	Unknown		X
21BEhr	Prehistoric	Unknown	Unknown		X
21BEm	??	??	Unknown		X
21BWg	Prehistoric	Unknown	Unknown	X	
21OLq	Historic	Town Site	Unknown	X	
21OLr	Historic	Town Site	Unknown	X	
21DOn	Historic	Unknown	Unknown	X	
21DOx	Historic	Ghost town	Unknown	X	
21OLt		Ghost town	Unknown	X	
21WEh	Historic	Structure	Unknown	X	
21WNnu	Historic	Saw/grist mill	Unknown	X	
21WNw	Historic	Town Site	Unknown	X	
21LNj	unclassified	unclassified	Unknown	X	

The site files at the Minnesota State Historic Society were searched along a proposed route south of Mankato (Table 3.1-23). Twenty sites and two site leads were identified within one mile of the proposed alignment. None of these sites are within the proposed right-of-way for this alternative.

Table 3.1-23
Known Potentially Eligible National Register Sites along the Mankato Bypass

Site #	Type	Prehistoric/Historic	NRHP Status
21BE0007	Mound	Prehistoric	Unevaluated
21BE0008	Mound	Unknown	Unevaluated
21BE0020	Artifact Scatter	Prehistoric/Historic	Unevaluated
21BE0021	Campsite	Prehistoric	Unevaluated
21BE0022	Habitation	Prehistoric	Unevaluated
21BE0025	Habitation/Mounds	Prehistoric	Eligible
21BE0026	Artifact Scatter	Prehistoric	Unevaluated
21BE0054	Artifact Scatter	Prehistoric	Unevaluated
21BE0063	Lithic Scatter	Prehistoric	Unevaluated
21BE0107	Artifact Scatter	Prehistoric	Unevaluated
21BE0108	Artifact Scatter	Prehistoric	Unevaluated
21BE0110	Artifact Scatter	Prehistoric	Unevaluated
21BE0111	Artifact Scatter	Prehistoric	Eligible
21BE0112	Lithic Scatter	Prehistoric	Eligible
21BE0113	Artifact Scatter	Prehistoric	Eligible
21BE0125	Unknown	Unknown	Unevaluated
21BE0137	Artifact Scatter	Prehistoric	Eligible
21BE0155	Unknown	Unknown	Unevaluated
21BE0157	Lithic Scatter	Prehistoric	Unevaluated
21BE0262	Unknown	Unknown	Unevaluated
21BEbj	unclassified	unclassified	Unevaluated
21BEn	unclassified	unclassified	Unevaluated

The proposed rail alternative through Mankato, Alternative M-3, is the existing generally east-west UP rail line in Mankato, Minnesota. The site files at the Minnesota State Historic Society were searched for any previously identified sites along the existing Union Pacific rail line in Mankato, Minnesota. No sites and no NRHP properties are located within the UP right-of-way.

No known sites, lead sites, or National Register properties were recorded in the area of the proposed connecting track construction alternatives southeast of Owatonna.

In addition to archaeological sites, sites of significance to Native Americans also occur throughout the project area. One of these sites, Reconciliation Park in Mankato, commemorates the trial and execution of 38 Dakota Indians on December 26, 1862 following the Dakota Uprising. The park, established on the site of the execution, was dedicated in 1997 and is currently the end-point for the Memorial Run, held each year on December 26. The small park contains a 35-ton carving of a bison. An associated park, Land of Memories Park, also in Mankato along the Minnesota River, is the site of events following the Memorial Run and an annual Pow Wow. These sites are important to the Dakota as well as other Americans, both Native and Caucasian. However, they were not included in the site files at the Minnesota SHPO as eligible for the NRHP.

Some cultural sites served specialized ceremonial functions. Examples include cemeteries, cairns, mounds, and petroglyph and pictograph sites. These sites are often considered sacred and may have been important components of the religion of Native Americans. These sites may occur in conjunction with villages, other habitation sites, or may be isolated. The identification of sacred sites is often difficult, archaeologically. According to the Handbook of American Indian Religious Freedom, Native Americans have historically observed the following as sacred sites:

- where the ancestors arose from the earth
- where the clan received its identity
- where one's ancestors are buried
- where the people receive revelation
- where the culture hero left ritual objects for the people
- where the people make pilgrimages and vision quests
- where the gods dwell
- where animals, plants, minerals, or waters with special powers are found (Vecsey, 1991:222).

Additional categories for sacred sites have been added by Linea Sundstrom (1996:2), including:

- places frequented by the spirits of one's ancestors
- where esteemed members of a group died or were buried
- where miraculous or mythical events took place

- where ceremonies were held in the past
- places recognized as sacred by other groups.

Sacred sites found across the landscape can be of two types, general and specific. These places often included springs, round stones (especially in areas at some distance from streams and other water sources), fossil outcrops, or places with rock art or stone effigies (Sundstrom 1996). Important components of these sites may include the isolated nature of the area, natural uniqueness of the area, and/or the vantage and viewshed the site provides. Although none of these sites are recorded within the project area, such sites likely occur throughout the area.

A Traditional Cultural Property (TCP) is another category of cultural resource. They can be defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. Traditional cultural properties include a wide variety of site types. They may include such things as traditional camping or village sites, medicinal and spiritual plant collection areas, religious sites, and cemeteries. No traditional cultural properties are known within the project area. However, the long period of occupation of the area by Native Americans makes it highly probable that such sites exist in the area.

Native American Issues

Native American occupation of the proposed project area has been well documented. It extends from prehistoric times to the present. Because impacts to cultural resources are expected, U.S. government to Tribal government (government to government) consultations with federally recognized Tribes that have historic, aboriginal, or current ties to the project area were initiated. Since traditional tribal occupations did not observe current state boundaries, state boundaries are not considered in this document. Although there are unresolved treaty issues, no currently recognized tribal lands are affected by this project.

With the assistance of the cooperating Federal agencies, State Historic Preservation Officer (SHPO) in Minnesota, the cooperating agencies, Bureau of Indian Affairs, and recommendations from individual Tribes, the Federally recognized Native American Indian Tribes with potential interest in the project area were identified. Consultation was initiated with these Tribes. Out of respect for cultural differences, the wisdom of elders, and the historically unresolved issue of treaties, several tribal groups/organizations were also invited to participate in the consultation meetings. It is the intent of the consultations that each Tribe is provided a reasonable opportunity to participate with the NEPA process in addressing the potential impacts of the proposed project (See Appendices I and J).

In September of 1998 and February of 1999, letters were sent to the Tribal Chairman (and any known cultural resource contacts) of each of the identified, potentially interested Tribes outlining the proposed project and requesting their participation in consultation. Only two responses were received. In February and March of 1999, contact was made by telephone with each tribal government to explain the request for consultation and the issues. Each Tribe was asked to appoint traditional and or cultural representatives to represent the Tribe in the consultation efforts.

The consultations to date have consisted of 1) two inter-tribal meetings to address tribal participation in the process; National Historic Preservation Act (NHPA) Section 106 process and joint development of a Memorandum of Agreement (MOA) between the Tribes, the Federal agencies, and DM&E; 2) several smaller meetings with tribal representatives; 3) personal appearances before tribal culture committees, elder groups, council chairman, and individual council members; and, 4) treaty commissions. Throughout the process tribal representatives have been frequently consulted by phone.

The substantive participation of tribal representatives to address a broad range of tribal concerns has resulted in a MOA developed jointly between the Tribes, DM&E, and the Federal agencies. For cultural resource issues, a draft Programmatic Agreement (PA), has been prepared. The PA includes Identification Plans (ID Plans) and the process for development of Treatment Plans for cultural resources affected by the proposed projects. These documents offer the Tribes substantive participation in the decision making process under NHPA Section 106 (Appendices I and J).

Continuing consultations include; 1) opportunity for an on-site review of the proposed project area; 2) opportunity to discuss the archaeological survey work to be conducted as part of the proposed project permitting and offer recommendations; 3) inter-tribal meeting after release of this Draft EIS to discuss any areas of concern and recommendations; 4) individual or small group meetings on an as needed or as requested basis.

3.1.14 SOCIOECONOMICS

The social and economic study area in Minnesota for the project involves the following ten counties: Winona, Olmsted, Dodge, Steele, Waseca, Blue Earth, Brown, Redwood, Lyon, and Lincoln.

3.1.14.1 Population and Demographics

The project area would be located in primarily rural areas of the above listed counties. The rebuild of the existing DM&E rail line would originate in eastern Winona County, just north of Winona and trend westward through the state. The rebuild in Minnesota would terminate in Lincoln County north of Verdi, Minnesota. Table 3.1-24 shows the communities potentially affected by the proposed rebuild.

Table 3.1-24
Potentially Affected Communities and Populations-Minnesota

Community	Population	Community	Population
Winona (CP Rail)	25,399	Benning (UP Rail)	182
Goodview	2,878	Mankato (UP Rail)	31,477
Minnesota City	261*	Judson	651
Stockton	529	Cambria	293
Lewiston	1,298	New Ulm	13,132
Utica	220	Essig	NA
St. Charles	2,642	Sleepy Eye	3,694
Dover	416	Cobden	62
Eyota	1,448	Springfield	2,173
Chester	NA	Sanborn	459
Rochester	70,745	Lamberton	972
Byron	2,441	Revere	117
Kasson	3,514	Walnut Grove	625
Dodge Center	1,954	Tracy	2,059
Claremont	530	Garvin	149
Owatonna	19,386	Balaton	737

Table 3.1-24
Potentially Affected Communities and Populations-Minnesota

Community	Population	Community	Population
Meriden	693	Burchard	NA
Waseca	8,385	Tyler	1,257
Janesville	1,969	Lake Benton	693
Smiths Mill	NA	Verdi	234
Eagle Lake	1,703		

1990 data from United States Census Bureau (no date)
NA - Information not available

Tables 3.1-25 through 3.1-28 show population, income and employment trends for the affected counties and the State of Minnesota.

The populations of five counties (Winona, Olmsted, Dodge, Steele, and Blue Earth) increased between 1986 and 1994. The population of Minnesota also increased during this time. All but Olmsted County, with an increase of 15.1 percent, were below the 8.4 percent increase rate of Minnesota. Five counties (Waseca, Brown, Redwood, Lincoln, and Lyon) saw decreases in population during this time. Between 1984 and 1990 the state and all affected counties experienced an enormous increase in minority populations ranging from 89.4 percent to 580 percent; no statistical information was available for Dodge, Waseca, Redwood, and Lincoln counties.

3.1.14.2 Employment and Income

Per capita income increased greatly between 1985 and 1989 ranging from 19.1 percent to 43.4 percent. The average per capita income increase of the affected counties was 28.8 percent; whereas, the increase for the state was 28.6 percent. The average increase of median income, at 71.5 percent, was also below the state's increase of 74.0 percent.

The percentage of persons living below the poverty level increased in the state between 1988 and 1996 from 9.5 percent to 10.2 percent. However, in six of the ten counties affected, that number decreased during the same time. In the four counties (Winona, Olmsted, Waseca, and Blue Earth counties) where there was an increase in the number of persons living below the poverty level, only two counties exceeded the state's increase of 7.4 percent; Winona County, which had an increase of 14.3 percent, and Blue Earth County, which had an increase of 42.3 percent.

The unemployment rate decreased in the State of Minnesota and all affected counties between 1986 and 1994. Eight counties, Winona, Dodge, Steele, Blue Earth, Brown, Redwood, Lyon, and Lincoln counties, had an unemployment rate decrease greater than the state's average of 18.2 percent.

3.1.14.3 Public Services and Fiscal Condition

There are many public services offered to the residents of area communities. Nearly all communities have newspapers available to them, and have elementary, middle, and senior high schools. Many of the communities have clinics and/or doctor and dentist offices. However, many of the communities do not have hospitals. Hospitals are found in the major cities (Winona, Rochester, Mankato). Nearly all of the communities offer recreational facilities and churches. Some of the smaller communities have volunteer fire departments and rely on county sheriffs for public protection services.

County taxes are collected in all counties throughout the State of Minnesota. Tax revenue is derived from the assessed value of property located within each county. Revenue is distributed among county, cities, and townships to provide additional funding for public services. Funding is used to help support schools, social services, road and bridge maintenance, fire departments, and criminal justice services including county and local courts, jails, and police. Other services include libraries, zoning and planning, and publication of county related documents. Table 3.1-28 provides a summary of tax data for each county.

Table 3.1-25
1996 Statistical Information for Potentially Affected Counties - Minnesota

Affected Area	Population[1]	Percent Minority[2]	Per Capita Income[3]	Median Income[3]	Percent below poverty level[3]	Unemployment Rate[1]	Acreage in Farmland (1,000)[4]	Number of Farms[4]	Average Size of Farms (acres)[4]
Minnesota	4,567,341	6.8	14,389	30,909	10.2	4.0	25,667	75,079	342
Winona	48,231	2.6	11,323	25,937	12.8	3.8	291	1,090	267
Olmsted	112,910	5.2	16,214	35,789	6.9	3.5	306	1,270	241
Dodge	16,539	2.4	11,932	29,071	7.6	5.4	241	740	326
Steele	31,392	3.4	12,993	30,571	6.7	3.7	232	819	283
Waseca	18,059	1.8	11,514	26,992	9.4	4.3	237	759	313
Blue Earth	54,022	3.5	11,125	25,366	18.5	2.9	383	1,091	351
Brown	27,049	1.3	11,244	25,032	8.3	4.0	347	1,190	292
Redwood	17,090	2.7	10,489	22,827	12.8	3.0	492	1,259	391
Lyon	24,963	2.5	11,121	24,689	11.8	3.5	395	947	417
Lincoln	6,805	0.8	9,616	19,211	15.8	4.8	255	696	367

1996 County and City Extra, Annual Metro, City and County Data Book. Edited by Courtenay M. Slater and George E. Hall. Berman Press, Lanham, MN, 1996.
[1] 1994 Data; [2] 1990 Data; [3] 1989 Data; [4] 1992 Data

Table 3.1-26
1988 Statistical Information for Potentially Affected Counties-Minnesota

Affected Area	Population[1]	Percent Minority[2]	Per Capita Income[3]	Median Income[4]	Percent below poverty level[4]	Unemployment Rate[1]	Acreage in Farmland (1,000)[5]	Number of Farms[5]	Average Size of Farms (acres)[5]
Minnesota	4,214,000	3.74	11,186	17,761	9.5	5.3	27,708	94,382	294
Winona	46,300	0.96	9,042	15,142	11.2	5.4	314	1,199	262
Olmsted	98,000	2.29	12,402	20,066	6.6	3.9	330	1,532	216
Dodge	15,300	-	8,757	16,800	10.4	7.5	269	933	289
Steele	30,000	0.5	9,925	16,866	7.9	5.8	237	1,061	223
Waseca	18,100	-	9,260	16,252	9.2	4.9	248	878	282
Blue Earth	51,000	1.47	9,343	15,609	13.0	4.3	414	1,459	283
Brown	28,000	0.44	8,985	15,403	10.5	5.5	339	1,390	244
Redwood	18,500	-	8,157	13,571	15.4	5.9	512	1,544	331
Lyon	25,000	1.32	8,919	14,830	12.1	5.6	408	1,175	347
Lincoln	7,600	-	6,707	10,358	22.1	5.9	267	823	324

1988 County and City Data Book, U.S. Department of Commerce Bureau of the Census. U.S. Government Printing Office, 1988.
[1] 1986; [2] 1984; [3] 1985; [4] 1979; [5] 1982

Table 3.1-27
Comparison of Statistical Information for Potentially Affected Counties-Minnesota

Affected Area	Population change	Percent Minority change	Per Capita Income change	Median Income change	Percent below poverty level change	Unemployment Rate change	Acreage in Farmland (1,000) change	Number of Farms change	Average Size of Farms (acres) change
Minnesota	8.4	97.1	28.6	74.0	16.4	-18.2	-7.4	-20.5	16.3
Winona	4.2	182.1	25.2	71.3	19.1	-26.7	-7.3	-9.1	1.9
Olmsted	15.2	161.6	30.7	78.4	20.5	3.4	-7.3	-17.1	11.6
Dodge	8.1	NA	36.3	73.0	-21.0	-22.2	-10.4	-20.7	12.8
Steele	4.6	611.6	30.9	81.3	-11.3	-33.2	-2.1	-22.8	26.9
Waseca	-0.2	NA	24.3	66.1	1.9	-12.5	-4.4	-13.6	11.0
Blue Earth	5.9	152.2	19.1	62.5	50.7	-28.6	-7.5	-25.2	24.0
Brown	-3.4	185.4	25.1	62.5	-23.6	-29.7	2.4	-14.4	19.7
Redwood	-7.6	NA	28.6	68.2	-23.2	-53.0	-3.9	-18.5	18.1
Lyon	-0.1	89.1	24.7	66.5	-2.6	-37.6	-3.2	-19.4	20.2
Lincoln	-10.5	NA	43.4	85.5	-36.0	-27.2	-4.5	-15.4	13.3

Table 3.1-28
County Assessed Value and Taxes Collected - Minnesota

	Market Value			Collected Taxes		
County	**1996 or 1999***	**1997**	**1998**	**1996 or 1999***	**1997**	**1998**
Winona	1,775,055,200*	1,462,977,600	1,558,518,000	29,333,336	28,145,907	29,633,582
Olmsted	4,615,147,269*	4,186,384,287	4,346,810,775	94,881,278	104,123,674	101,792,419[1]
Dodge	690,143,200	743,777,300	801,046,600	10,088,930	10,553,092	11,379,366
Steele	1,662,085,500*	1,245,460,100	1,485,201,800	6,292,881	6,663,657	6,912,742
Waseca	830,157,500	859,269,500	921,020,700	13,274,907	14,676,110	15,000,000
Blue Earth	2,499,354,710*	2,146,878,600	2,302,271,600	Data not available	41,525,666	41,185,026
Brown	1,135,891,300	1,191,006,800	1,232,656,100	Data not available	18,793,212	18,644,192
Redwood	707,104,700	1,008,033,800	1,084,617,000	14,759,318	14,793,768	14,868,877
Lincoln	300,685,300	319,547,400	340,368,900	5,444,320	5,485,238	5,765,601
Lyon	1,060,032,700	1,095,072,900	1,179,508,800	17,376,658	17,729,120	16,687,268

[1] = as of 4/23/99
personal correspondence with the counties

3.1.15 ENVIRONMENTAL JUSTICE

Executive Order No.12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, directs individual Federal agencies to develop approaches that address environmental justice concerns. Although the Order does not require independent agencies such as the Board to conduct environmental justice analyses, potential environmental justice issues were raised during the scoping process. SEA conducted an investigation of potential environmental justice issues because:

- the President requested agencies to comply with the Order, particularly during the NEPA process.
- the Council on Environmental Quality (CEQ) guidance and the draft Environmental Protection Agency (EPA) guidance on environmental justice emphasize addressing environmental justice concerns in the NEPA context.
- the Board is responsible for ensuring this project is consistent with the public interest.
- environmental justice concerns were raised during the scoping process.

The purpose of Executive Order No. 12898 is to identify and address disproportionately high and adverse impacts to minority and low-income populations, potentially occurring due to agency actions. SEA investigated whether potential environmental justice communities were present within the project area. Census information was obtained for each county within the project area. For organizational purposes, individual counties are divided into census tracts, and census tracts into census block groups. Statistical information at the census block group level was obtained and reviewed for those census block groups that are immediately adjacent to or through which the existing rail line passes. Information was also obtained for block groups that would be crossed by any of the Extension Alternatives, or if portions of the census block fell within the impact contours, which extend to approximately 2,230 feet on either side of the rail line. Individual census block groups were determined to potentially be minority or low income based on criteria developed by the EPA and SEA. These criteria are:

- at least one-half of the census block group is of minority status
- at least one-half of the census block group is of low-income status

- the percentage of minority status is at least 10 percentage points higher than for the entire county in which the population is located

- the percentage of low-income status is at least 10 percentage points higher than for the entire county in which the population is located.

Based on an assessment of the project area, 24 census block groups were identified as potential environmental justice communities in Minnesota. Four block groups are located in Winona county, 10 in Olmsted County, 3 in Steele County, and 7 in Blue Earth County. Of these, 3 census blocks in Winona County, 6 in Olmsted, 3 in Steele, and 9 in Blue Earth met the criteria as an environmental justice community because their percentage of low income population within the census block group exceeded the percentage of low income population for the respective county by 10 percentage points or more. The remaining census block group in Winona County met the criteria for environmental justice due to at least 50 percent of the population of the census block being low income. Six census block groups in Olmsted County, and 2 census block groups in Blue Earth County meet the environmental justice criteria due to the percentage of minority population within the census block group exceeding the percentage of minority for the respective county by 10 percentage points or more. Two census block groups in Olmsted and 1 in Steele County met the environmental justice criteria of exceeding the county percentage by 10 percentage points or more for both low income and minority populations.

3.1.16 RECREATION

Recreational opportunities are abundant within the project area. Many of these opportunities center on the numerous lakes in the project area as well as the many designated hunting areas. The lakes provide abundant opportunities for water recreation including fishing, boating, swimming, and water skiing. Throughout the project area, state trout streams and ponds also provide fishing opportunities.

State parks also provide numerous opportunities for recreation. Descriptions of state parks located in the project area are listed in Section 3.1.4.8 State Lands.

The DM&E rail line would pass through or come in close proximity to six county parks. These are listed in Table 3.1-29.

Table 3.1-29
County Parks located within One Mile of the Existing Rail Line-Minnesota

Name	County	Location	Acres	Opportunities
Farmers Community Park	Winona	Southwest of Winona, adjacent to and east of the rail line	46	picnicking
Chester Woods County Park	Olmsted	Just south of Chester; within 500 ft of rail line	1300	hunting swimming picnicking
Crane Creek County Park	Steele	3 miles west of Owatonna; within one mile of rail line	7	picnicking
Goose Lake County Park	Waseca	2.5 miles east of Waseca; adjacent to rail line	251	hunting hiking
Williams County Park	Blue Earth	Just west of Mankato; adjacent to rail line	65	nature trail
Plum Creek County Park	Redwood	One mile SW of Walnut Grove; within one mile of rail line	207	fishing swimming picnicking primitive camping

Other recreational opportunities include city parks, museums, historic sites, and towns. The gently rolling hills are home to many museums and historic sites that keep the spirit and traditions of the Dakota Indians and early pioneers alive. In addition, south of the Minnesota River is a patchwork of farmlands scattered with historic towns.

Well known author, Laura Ingalls Wilder, and her family lived throughout southwest Minnesota. Her stories note many of the towns and features of the area. The popularity of her books has resulted in numerous museums, historic sites, and tourist stops in association with her life stories occurring throughout the region and along the existing rail line.

3.1.17 AESTHETICS

3.1.17.1 Visual Resources

Although there are no wild or scenic river segments within the project area (Minnesota Department of Natural Resources 1998j), there are two state scientific and natural areas. One is the Hythecker Prairie State SNA and the other is Cottonwood River Prairie State SNA. Both areas are described in more detail in Section 3.1.4.8 State Lands.

There is much scenic beauty in southern Minnesota. In the Mississippi Bluff Country, in the southeast corner of the state, tall, wooded bluffs overlook the Mississippi River. Gently rolling hills give way to ravines and valleys, where creeks wind through the pasture land. River towns and bluff country villages are abundant with their 19th-century architecture, antique shops, and numerous bed and breakfast and historic inns. Trout streams, canoe rivers, and bike trails also provide enjoyment for the area communities. Autumn brings beautiful fall colors to the many wooded bluffs (Minnesota Office of Tourism).

The Historic Prairie, home of the Dakota Indians consists of a patchwork of farmlands scattered with historic towns. The area is generally open, with few trees except along fencerows, windbreaks, and in small woodlots around farmsteads (Minnesota Office of Tourism). The green agricultural fields and trees of spring and summer turn to a mix of colors in fall and large areas of open snow fields in the winter. No established scenic overlooks or vantage points are known in the area. However, many parts of the project area are considered scenic by many residents and area visitors.

The existing roadways and railroad tracks contribute to noise in the project area. However, the majority of the project area is in rural parts of Minnesota where communities enjoy a quiet lifestyle.

3.1.17.2 Nightlights

Nightlights exist throughout the area, most often associated with farmsteads, in the rural parts of the project area, and concentrated in the communities and cities along the rail line. Lighting includes streetlights, dusk to dawn lighting and other security lights for farms, residences, businesses, and other facilities to provide security and safety. Lighting is also utilized in areas to provide safety for pedestrians and motorists during night time hours.

* * * * *

3.2 MINNESOTA - RAIL LINE RECONSTRUCTION IMPACTS

This section discusses the potential impacts that may occur due to the reconstruction and operation of unit coal trains over the 219 miles of existing DM&E rail line in Minnesota as a result of the proposed extension into the Powder River Basin. Reconstruction and operation impacts in this section include those impacts that would occur along portions of the existing rail line, except for those occurring along rail line sections for which corresponding alternative alignments (bypasses) or connecting tracks have been proposed. Potential impacts for alternative alignments or connecting tracks are discussed in Sections 3.3 and 3.4. However, operational impacts for the existing rail line would include those anticipated along the portion of the Canadian Pacific Railway (CP) rail line within Winona, Minnesota. Due to current rail traffic along the existing DM&E rail line, impacts during operation would primarily result from the increase in the number, size, and frequency of trains proposed to result from the Powder River Basin Expansion Project.

3.2.1 NO-ACTION ALTERNATIVE

The No-Action Alternative would be denial of authority for DM&E to construct a rail line extension into the Powder River Basin (PRB). For the existing rail line in Minnesota, the No-Action Alternative would result in no reconstruction activities related to system-wide rehabilitation of the existing rail line and no operational changes in train activity along the rail line. None of the construction impacts associated with reconstruction of the existing rail line (as discussed in Section 3.2.2) would occur. Reconstruction impacts would include:

- disruption to adjacent land uses,
- conversion of land to rail related facilities,
- disturbance to and erosion of soil,
- clearing of vegetation,
- disturbance to wildlife,
- air emissions from construction vehicles and fugitive dust,
- increases in noise from construction equipment,
- disruption of traffic flow at grade crossings, and
- increased economic activity from construction workers.

Additionally, none of the operational impacts would occur. Noise levels along the rail line would remain the same, as would air emissions from locomotives, vehicle delays at grade crossings, and train and vehicle safety. Service and reliability concerns of existing shippers, discussed in Chapter 1, would continue, reducing the competitiveness of shippers in their respective markets. This lack of competitiveness and rail service reliability would likely result in a greater reliance of shippers on trucks for transportation, resulting in hundreds of trucks being added to local roadways. Increased truck numbers would increase wear on area roads and reduce vehicle safety. Impacts to wildlife including disturbance and mortality from passing trains would continue at present levels. Additional jobs and tax revenues generated by increased railroad activity and improved railroad facilities would not be provided. Under the No-Action Alternative, the existing condition of the rail line will continue to deteriorate, significantly impacting rail service efficiency, reliability, safety.

The Board, in its December 10, 1998 decision, indicated the No-Action Alternative could result in DM&E ceasing to be a viable railroad. Should this occur, it appears unlikely that another rail carrier would acquire the DM&E system given its deteriorated condition and limited revenue base. Therefore, rail service along the existing system could cease. The existing shippers along the rail line would lose rail service. Some shippers would be able to utilize trucks for transportation. Because one rail car transports the equivalent of four trucks, a significant number of additional trucks could be added to local roads. Other shippers would be unable to competitively convert to truck transport and would be required to relocate to areas with rail service or cease to operate. Many of these shippers include grain elevators serving local agricultural communities. Loss of rail service and shippers would require local farmers to transport grain and other products greater distances for shipment, increasing operating costs for an already stressed agricultural economy. Increased reliance on trucks would increase air emissions from vehicles due to truck transport being less fuel efficient than rail. Losses would be experienced, including the loss of several hundred jobs in Minnesota associated with railroad operation and maintenance, jobs provided by shippers forced to relocate, and revenues generated to the counties through taxes and employee spending. Other businesses used by these employees could experience reductions in revenue.

3.2.2 EXISTING RAIL LINE RECONSTRUCTION

The following discussion presents the potential impacts associated with reconstruction of 219 miles of existing DM&E rail line in Minnesota. Reconstruction activities would involve removal of deteriorated or weakened materials; installation of new ballast materials, ties, and rails; and the replacement of bridges and culverts at stream crossings and the installation of new rail over these structures. Both potential reconstruction and operational impacts are presented.

3.2.3 CLIMATE

No impacts to the climatic conditions of the project area would occur as a result of the reconstruction of the existing DM&E rail line.

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3.2.4 TOPOGRAPHY

When the existing DM&E rail line was constructed between 1862-1879 across Minnesota, alterations in the topography immediately adjacent to the rail line were necessary. Low areas and valleys were filled, hills and high points were cut-through in order to provide a rail bed grade suitable for train operations. These cuts and fills likely altered local drainage patterns, and in some cases, streams may have been channelized or realigned to accommodate the rail line. Most of these changes took place over 100 years ago. Drainage patterns and topographic conditions have reestablished along the existing rail line, with the rail bed providing a significant influence on drainage patterns. Numerous streams and rivers are crossed by the existing DM&E rail line. As part of this project, many culverts and bridges would be replaced and the rail line reconstructed. Installation of new bridges and culverts would be done in a manner that would not alter the drainage pattern of area streams and rivers. Some minimal channelization or relocation of drainages may be necessary for installation of bridges and culverts. Because reconstruction activities would occur only in the immediate vicinity of the crossing structure, and the design of bridges and culverts would maintain adequate flow rates, stream and drainage impacts would be minimized.

Additionally, in some areas, the existing rail grade may be raised or flattened to provide a more efficient operating grade. These grade adjustments are expected to be minimal and accomplished within the existing rail line right-of-way. No additional cuts or fills, modifying the topography of adjacent areas, are anticipated. No significant impacts to project area topography are expected.

3.2.5 GEOLOGY AND SOILS

3.2.5.1 Unique Geological Formations

Due to the lack of unique geological formations in the project area, as noted in Section 3.1.3.1, the reconstruction of the existing DM&E rail line in Minnesota would not result in any impacts to unique geological formations.

3.2.5.2 Geologic Hazards

The geological hazards within the project area are described in Section 3.1.3.2. It is unlikely that the process of rebuilding the existing DM&E rail line would change the probability of a hazardous geological episode, nor would such an episode affect the construction or operation of the existing rail line.

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3.2.5.3 Soil Impacts

The reconstruction of 219 miles of existing DM&E rail line has the potential to impact soils in a variety of ways. Soil-disturbing activities would result due to earthwork, operation of reconstruction equipment, and the construction of staging and laydown yards. DM&E's existing right-of-way varies from 50 to 200 feet in width, averaging approximately 150 to 200 feet. Although reconstruction activities would be restricted to the existing right-of-way, it is conservatively estimated that approximately 5,309.1 acres of soil disturbance would occur in Minnesota. Impacts from this project could include soil loss due to erosion, loss of soil profiles and destruction of pore spaces, and loss of organic matter, thereby reducing biological activity.

The majority of the soils in the project area are composed of loess and underlying glacial till. These soils have moderate susceptibility to wind and water erosion (Table 3.1-3). However, in areas such as Winona and Olmsted County along rivers and bluffs, where slopes exceed 15 percent, erosion potential would be high. The average annual precipitation in the project area varies from moderate to high. Increases in soil erosion due to water runoff and wind could occur in areas where surface soil or vegetation are disturbed. Areas cleared of topsoil, denuded, or disturbed during construction would be more susceptible to erosion because subsoils tend to have lower infiltration and percolation rates, increasing potential for runoff. This could be further aggravated by compaction from construction equipment, making soils less permeable to infiltration.

Implementation and maintenance of erosion control measures before, during, and following reconstruction is important in minimizing erosion. Immediate seeding and mulching along the right-of-way following completion of reconstruction activities would help control erosion and minimize soil loss. This would be especially important in areas near waterways, where the potential for increased sediment runoff could impact fisheries.

Excavation of soils could result in the mixing and loss of the natural soil profile, mixing of soil profiles, destruction of pore space continuity and soil structure, and loss of organic matter. These changes could adversely affect soil-plant relations due to decreased water holding capacity, aeration, and chemical composition. However, along the majority of the existing right-of-way, soils were subjected to previous disturbance and excavation during initial construction of the rail line. Removal of topsoil, mixing of profiles, and compaction likely occurred at that time. These areas have revegetated and soils have stabilized and recovered from this disturbance. Organic matter and topsoil have begun to accumulate. However, evidence of disturbance is still present. Any physical disturbance to soils during this project would mainly occur to previously disturbed soils that would be expected to recover to a level comparable to the current condition.

Disturbance to soils could decrease important soil microorganisms such as bacteria, fungi, and algae which are essential in soil nutrient cycling. Removal of vegetation, especially nitrogen-fixing legumes, can also impact nutrient cycling and biological processes within the soil. Natural soil organisms are killed or reduced in soils stored in piles, through compaction and disturbance. However, these impacts would occur primarily during reconstruction within the right-of-way and should not be significant.

Generally, reconstruction activities would occur within the existing DM&E right-of-way. However, in some isolated areas, special conditions, such as topography, may require construction equipment and activities to occur outside the right-of-way. In these areas, soils previously undisturbed would be subject to disturbance and erosion. These areas are expected to be minimal and implementation of appropriate erosion control measures and soil reclamation would result in only minimal soil impacts.

Following completion of reconstruction activities, disturbed areas would be revegetated, both through seeding and invasion of adjacent plant communities. Following establishment of vegetative cover, potential impacts to soil would largely cease. During operation of the project, impacts to soil could occur in small, localized areas during maintenance activities. Additionally, in the unlikely event of a derailment, soils could be impacted by physical disturbance or release of materials such as fertilizers, fuel, or lubricants. Impacted soils would either be cleaned up or removed. As a derailment would be localized, largely confined to the existing right-of-way, and unlikely, any associated impacts would be insignificant.

The existing rail line is adjacent to approximately 238.0 miles (cumulative total for both sides of the track) of prime farmland. Because reconstruction activities would be limited to an existing, disturbed rail right-of-way which is not available for agricultural use, impacts to prime farmland would be insignificant. In some isolated areas, reconstruction activities may be required outside the right-of-way and prime farmland could be affected. However, prime farmland is abundant in Minnesota. Any areas of prime farmland affected by this project would be small and localized. In the event of an accidental spill or derailment, contamination of prime farmland soil may occur. No long-term impacts to prime farmland are expected to occur.

3.2.5.4 Paleontological Resources

Paleontological resources (i.e. fossils) occur throughout Minnesota, primarily in lake sediments, ancient gravel deposits, and bedrock. Only minimal excavation is anticipated during reconstruction and excavation would largely include surface earthwork within previously disturbed areas. Disturbance of bedrock or lake sediments is not anticipated. Therefore, the reconstruction and operation of the existing rail line is not anticipated to have any impact on paleontological resources.

3.2.6 LAND USE

The potential changes or affects to land use relate to rebuilding the existing DM&E rail line and the proposed increase in rail traffic were evaluated and are discussed below. Land uses potentially affected included agriculture, residential, business/industrial, minerals and mining, public facilities, Federal, state and reservation/treaty lands, and utility corridors.

3.2.6.1 Agricultural

Based on measurement of aerial photographs, agricultural lands potentially affected by the reconstruction of the existing rail line would include cropland and pasture land. The existing rail line is adjacent to approximately 123.8 miles of agricultural land in Minnesota. Reconstruction activities would primarily be limited to the existing right-of-way. Therefore, reconstruction related impacts to agricultural lands would be minimal. Following reconstruction, the rail right-of-way would be fenced and other land uses prohibited within the right-of-way. In some cases, agricultural practices have encroached on the right-of-way which could result in crop damage and soil disturbance from the use of heavy reconstruction equipment. Soil compaction and fence damage could also occur in these areas. However, future use of lands within the rail right-of-way would be prohibited, resulting in these areas being permanently converted to rail use. This small conversion of agricultural land to railroad right-of-way would not be significant, although it may have an impact on the overall crop production of the individual farmers who have encroached on the existing right-of-way.

In some areas, reconstruction activities may be required outside the existing right-of-way. In these areas, adjacent agricultural lands may be impacted. Soil mixing, compaction, erosion, and crop damage would all be potential impacts. As disturbance outside the right-of-way would be minimal and localized, no significant impacts to these agricultural lands are anticipated.

Two of the counties through which the existing rail line extends, Winona and Waseca, are participants in the Minnesota Agricultural Land Preservation Program. This program, established under Minnesota State Statute 40A.01, is designated to " (1) preserve and conserve agricultural land, including forest land, for long-term agricultural use in order to protect the productive natural resources of the state, maintain the farm and farm-related economy of the state, and assure continued production of food and timber and agricultural uses; (2) preserve and conserve soil and water resources; and (3) encourage the orderly development of rural and urban land uses." Agricultural lands can be enrolled in the program for a minimum of eight years, after which lands can be removed either by the landowner or the county. Prior to the eight year term ending, lands may be removed from the program only due to a public emergency and under executive order from the governor. Acquisitions of lands or easements on lands enrolled in the program under eminent domain are subject to review by the environmental quality board which may suspend eminent domain up to one year on preserve lands if it determines the proposed action is not compatible with the goals of the program and other feasible alternatives are available. This program is available to all counties in Minnesota. However, Winona and Waseca are the only counties along the existing DM&E rail line with lands enrolled in the program.

3.2.6.2 Residential

The existing rail line would pass adjacent to approximately 10.8 miles of residential land use, generally located within towns and cities. Reconstruction activities in or near residential areas could result in temporary impacts, including general ground disturbance, inconvenience from noise, dust, traffic congestion, vehicle delays, and emissions generated from construction equipment.

Noise disturbance from construction activities during reconstruction would be the primary noise impact to adjacent residences. Although reconstruction activities are expected to occur primarily during daytime hours, the use of two-shifts would extend the construction day into the later hours of the evening. Construction noise and lighting between the hours of 8 p.m. and 11 p.m. may affect the ability of residents on adjacent properties to enjoy their evenings at home, both inside and out, and disrupt their usual sleep patterns. Equipment maintenance activities are anticipated to occur between midnight and 7 a.m. The noise and lighting associated with equipment maintenance activities could also disturb adjacent residences.

The presence of construction equipment and materials could attract children from residential areas, potentially posing a safety hazard. Lighting may be used in these areas to minimize security risks. However, security lighting may impact local residents during nighttime hours.

The potential for construction impacts would be limited to the short period required for reconstruction. Reconstruction would progress at approximately one mile per day, with additional time for extra work required in some areas. Impacts such as noise, fugitive dust, and traffic congestion could be significant in areas where numerous residences are located in close proximity to the existing rail line. However, reconstruction impacts would be generally short-term (only a few days or weeks) and would occur in only a few locations concurrently, limiting the number of residences potentially affected at any given time.

Long-term impacts in residential areas associated with the operation of increased train traffic over the rail line would include wayside and horn noise, locomotive emissions and coal dust, grade crossing safety, and traffic congestion. These impacts are discussed later in this chapter. Additionally, real estate values may be affected by the increased number of trains resulting in residences adjacent to the rail line becoming less desirable to potential buyers. However, some of these impacts could be off-set by the potential increases in population resulting from the initial influx of construction workers (Table 3.2-22) requiring lodging and the long-term increase in the number of railroad related jobs (approximately 210 at 100 MNT level of operation).

The increase in population and employment would result in individuals relocating to the area and acquiring housing. This influx of workers and their families would likely result in a more stable real estate market in the larger communities along the rail line, as these would be where most of the workers would be expected to relocate due to the services they provide. In smaller, more rural communities, real estate values are likely already depressed due to struggling agricultural economies. Increased rail traffic would likely make residential areas in these small rural communities even less desirable, further reducing residential real estate values.

Specific long-term, residential impacts are difficult to quantify as they may be significant in some areas but not in others, or to one home owner and not another, depending on the overall real estate market of the area and the concerns of the buyer. Overall, some impact is expected.

3.2.6.3 Business and Industrial

The project would pass adjacent to approximately 39.6 miles of business and industrial land. Reconstruction activities in or near business or industrial areas could result in temporary impacts related to inconvenience to employees and patrons due to reduced access, noise, fugitive dust, and traffic congestion as a result of the operation of reconstruction equipment, vehicles, and the movement of workers. These impacts would be short-term, occurring only during reconstruction in the vicinity of the business. Some temporary reductions in patronage may occur due to the selection by potential customers of businesses that are not experiencing these inconveniences. However, following reconstruction, patrons would be expected to return. Because impacts would be temporary, no significant impacts to business and industrial land use due to reconstruction are anticipated.

Long-term impacts to business and industrial land use associated with the operation of additional trains would include noise and traffic delays. Congestion associated with reduced access from blocked crossings, and the potential reduction in patronage associated with these impacts would also occur. The Board does not consider commercial or industrial facilities as noise sensitive as they are places of business with high levels of activity and are only subject to noise impacts during business hours. Additionally, rail operations are considered an industrial use and are considered compatible with other industrial land uses. Therefore, they are not included as noise sensitive receptors in the discussion of noise impacts in Section 3.2.9.

Noise generated by passing trains could disturb nearby businesses. However, normal business activities produce higher than normal noise levels. Businesses in these areas usually experience regular disturbances. Additionally, trains would only impact businesses during regular business hours and individual disturbances would be brief, limited to an average of 1.67 minutes required for an individual train to pass. The intensity of horn noise is not expected to increase, only the frequency (number of times) that it would occur. Inconveniences associated with patrons trying to converse with proprietors or grade crossings occasionally blocked by trains may cause some patrons to take their business elsewhere.

Businesses at most risk of noise disturbance would include hotels, restaurants, and movie theaters located in close proximity to the rail line. The general level of background noise within businesses such as theaters and restaurants would reduce the potential disturbance from noise created by passing trains. In theaters, the volume of sound produced during a movie would make it unlikely for patrons to be disturbed by a passing train. In restaurants, conversations between patrons and staff as well as general noise from restaurant activities, such as stacking dishes, and background music would also reduce the level of disturbance. Hotels, however, lack the presence of background noise. Patrons are generally provided with a quiet environment within a hotel. Noise abatement measures used in the construction of these facilities are designed to reduce disturbance due to noise generated outside the business premises. The businesses in areas adjacent to the rail line which do not currently have noise abatement measures incorporated as part of their construction, particularly older buildings, would be most susceptible to higher noise levels than those that have abatement measures.

The incidence of noise disturbance would increase according to the amount of time patrons are present in the business. Time spent in restaurants and theaters would generally be approximately 2 hours. Based on an even distribution of train passing events over a 24-hour period, patrons would potentially experience two train passing events during the time they are on the premises. However, hotel patrons would potentially experience 10 train passing events (based on 8 hours of sleep and 2 hours of leisure and preparation time). Disturbance would most likely be experienced by patrons in rooms with exterior walls facing the rail line. Disturbance during nighttime hours could be a significant impact for hotels located in close proximity to the rail line if noise abatement measures are not used.

For those businesses and industries currently served by DM&E, improved rail service should improve their ability to compete in the marketplace. Businesses such as grain elevators and factories along the rail line would benefit from the improved service. Improved rail service and a better ability to compete may enable these businesses and industries to increase their profit margins and expand their operations. The value of these operations would be increased, as well as the real estate they occupy. Additionally, efficient rail service in the project area may make the region attractive to new business and industry, particularly in agricultural processes and services. Properties suitable for industrial development along the existing rail line would be expected to increase in value.

Operational impacts to business and industrial facilities are expected to vary. Commercial businesses, particularly those susceptible to noise disturbance, may be significantly and negatively affected. However, facilities served by the rail line may see significant positive impacts due to improved marketplace competition. Land suitable for industrial development may increase in value, possibly significantly. Therefore, overall impacts to business and industrial land use are expected to be positive. However, negative impacts, potentially significant, may occur to certain businesses adjacent to the rail line.

3.2.6.4 Minerals and Mining

Based on data from the USGS, the existing DM&E rail line passes adjacent to 0.3 mile of land classified as strip mines, rock quarries, and gravel pits in Minnesota. The reconstruction of the existing rail line may lead to expansion of these operations if the materials they contain are suitable for rail line construction. Their proximity to the rail line makes them a sensible choice for construction materials and the project would be expected to have a positive effect on them. Additionally, during operation and maintenance of the project, these facilities could continue to be used to provide materials for the rail line. Impacts to these land uses are expected to be positive.

3.2.6.5 Public Facilities

A variety of public facilities are located in proximity to the existing rail line, including 29 schools, 59 churches, 2 medical facilities, and a variety of recreational areas, as described in Section 3.1.4.5. During reconstruction activities along the existing rail line, these facilities would potentially be exposed to increased noise, fugitive dust, and vehicle emissions. These impacts may reduce public use of some facilities or change use patterns, such as time of day or increased weekend usage when construction is not occurring. The presence of construction equipment and workers may result in congestion on local roadways reducing access to these facilities. Additionally, traffic delays and detours may occur during reconstruction activities at grade crossings and during installation of crossing protection structures. Increased use of facilities, including parks, churches, and medical and dental facilities may occur due to use by construction workers. These impacts would be temporary and short-term, occurring only during the period of reconstruction. Impacts, particularly to movement of vehicle traffic to these facilities could occur. However, reconstruction would only occur for a short time and at scattered locations along the rail line. No property associated with public facilities would be required for reconstruction of the existing rail line. Overall, construction related impacts to public facilities would not be significant.

Operation of the reconstructed DM&E rail line would result in an increased number of longer trains operating at higher speeds over the existing rail line. This increase in operations has the potential to affect public facilities. General impacts to public facilities could include reduced access due to blocked road crossings, increased noise, reductions in air quality due to increased locomotive emissions, increase traffic congestion, risk of accident to pedestrians due to increased train activity, particularly in recreational areas, and reduced grade crossing safety. These impacts are discussed in detail later in this chapter.

3.2.6.6 Federal Lands

3.2.6.6.1 Forest Service Lands

There are no U. S. Forest Service lands in the proposed project area in Minnesota. Therefore, the proposed reconstruction would have no impact on them.

3.2.6.6.2 Bureau of Land Management Lands

There are no Bureau of Land Management lands in the proposed project area in Minnesota. Therefore, the proposed reconstruction would have no impact on them.

3.2.6.6.3 Bureau of Reclamation Lands

There are no Bureau of Reclamation lands in the proposed project area in Minnesota. Therefore, the proposed reconstruction would have no impact on them.

3.2.6.6.4 Fish and Wildlife Service Lands

The only U.S. Fish and Wildlife Service (USFWS) lands located in the project area are limited to the Upper Mississippi Wildlife and Fish Refuge at the extreme east end of the project area and a habitat easement approximately 1.0 mile north of Eagle Lake in Blue Earth County. For the reasons below, the Upper Mississippi Wildlife and Fish Refuge should be unaffected by the proposed project. The only potential impacts during reconstruction would result from increased erosion and sedimentation during reconstruction of stream crossings with drainage into the Refuge portion of the Mississippi River. These impacts are expected to be minimal, if any, due to implementation of erosion and sedimentation controls by DM&E during reconstruction and the distance of DM&E rail crossings from the Refuge. During operation of the rail line, derailments and spills of hazardous materials, such as fuel, at stream crossings could result in releases of materials downstream into the Refuge. However, the distance from the crossings to the river and the small quantities of material released would likely enable the spill to be contained prior to the Refuge. No additional hazardous materials other than those currently transported (Section 3.1.11.1) are anticipated and the reconstruction of the existing rail line would greatly improve safety and reduce the likelihood of a derailment. Accordingly, no significant impacts to the Refuge are anticipated.

A USFWS habitat easement is located approximately 0.3 mile east of the rail line (Section 3.1.4.6.4). This easement is managed for wildlife habitat and is currently exposed to rail noise and activity. During reconstruction, the increased human presence may make areas nearest the rail line undesirable for wildlife use, resulting in selection of other areas of the easement or other, off-site habitats. This impact would be temporary during construction and should be minor due to the distance from the rail line. During operation, wildlife using the easement would be subjected to increased levels of noise and rail activity. However, the existing exposure and distance from the rail line should result in the increased rail traffic having only minimal impacts on the easement.

3.2.6.7 Reservation and Treaty Lands

There are no reservation or treaty lands in the proposed project area in Minnesota. Accordingly, the proposed reconstruction would have no impact on them.

3.2.6.8 State Lands

State lands within the project area include State Wildlife Management Areas, State Parks, State Forests, State Scientific and Natural Areas, and trails. These areas are described in Section 3.1.4.8.

State Wildlife Management Areas and Wildlife Refuges

The existing rail line passes through or immediately adjacent (within 500 feet) to nine State Wildlife Management Areas (Table 3.1-7). DM&E indicated that reconstruction of the rail line through these areas would generally occur within the existing rail line right-of-way. DM&E would not need to acquire additional lands because the existing right-of-way is sufficient for reconstruction of the rail line, therefore no reductions in the size of these areas would result.

Construction noise and human activity would likely disturb local wildlife, resulting in them seeking other, more secluded habitats. Construction activity during periods of high use of these areas, such as during fall and winter hunting seasons, would reduce their appeal to the public. Potential users would select other locations, increasing their use. However, most construction activities would occur during the summer and for only a short period. Summer users such as hikers and fisherpersons would be those primarily affected. Ground disturbance during construction could increase erosion into waterbodies in these areas, reducing their value to wildlife and fisheries. These areas are generally small and the limited number of individuals using them should be easily accommodated by other nearby public lands should the current users find the conditions during reconstruction undesirable. Therefore, these impacts would be small and limited to the period of reconstruction and would likely have little affect on use of these areas. However, reconstruction should have little overall impact on area use.

During operation of the project, the increased train traffic could make these areas less desirable to wildlife and the public due to increased disturbance to the natural setting. However, as noted above, these areas are currently exposed to rail activities associated with operation and maintenance. Users of these areas have adapted to accept the current disturbance. If adequate wildlife habitat is available, some wildlife would continue to use these areas. Consequently, if the game species are present, hunters would continue to use the areas. Some decline in use of these areas, the habitat value they provide, and increased mortality of wildlife may occur due to the increase in frequency, length, and speed of trains.

State Parks

Three state parks are located in the vicinity of the existing DM&E rail line (Section 3.1.4.8). Only one, Minneopa State Park, would potentially be affected by the proposed project. Approximately 2.7 miles of the existing DM&E rail line is located within or adjacent to the park. The existing rail line runs along the base of the Minnesota River's floodplain sideslope, below the majority of the park. The park provides year-round recreational opportunities and both day and overnight-use facilities. During reconstruction, noise and congestion would interfere with the natural environment of the park and detract from the users' enjoyment. However, location of the existing rail line at a lower elevation than most of the park would reduce the increase in noise perceived within much of the park. The more remote areas of the park adjacent to the river would be subject to increased noise levels, including the effects of the noise being confined in the river valley. Use of areas along the river could decrease. However, because these areas are less accessible to the public, they likely receive limited use. Within the upper areas of the park, impacts from reconstruction would primarily occur to areas adjacent to the floodplain slope, above the existing rail line. This would include camping facilities. The floodplain sideslope would help absorb noise and direct it upward. Reconstruction activities during early morning hours and late evening would likely disturb campers and detract from their recreational experience, leading to reduced use during reconstruction. Little impact to other areas of the park should occur.

Currently, Minneopa Park is exposed to 3-5 DM&E trains per day, including through and wayfreight trains. In addition, a UP rail line also passes through portions of the park. Seven trains per day operate on the UP rail line. During operation, rail traffic on the DM&E rail line would increase to between 11 and 37 trains per day, depending on the amount of coal DM&E transports. Impacts to the park would include increased noise, air emissions, reduced access, and pedestrian safety concerns.

Although the park is currently subjected to rail related noise, the frequency of disturbance would increase substantially. Impacts from DM&E trains would be limited to wayside noise, because there are no grade crossings where train horns would be sounded located within the park. The location of the rail line at the bottom of the floodplain slope would help reduce noise levels to the more noise sensitive areas of the park, including the campground. These areas are currently subject to rail noise from both DM&E and UP, as well as vehicle traffic on nearby State Routes 68 and 60 and U.S. Hwy 169. However, increased rail noise, particularly at night, would likely result in a substantially higher disturbance to park users.

The location of the rail line 30 to 40 feet below much of Minneopa Park could result in accumulation of locomotive emissions along the top of the sideslope within the park. These emissions would be dispersed by wind relatively quickly except during periods of little or no wind. The location of the park in the floodplain and the forested vegetation along the sideslope would likely help prevent emissions from dispersing over the upper areas of the park. However, users of the park along the sideslope, particularly at the campground, could be exposed to diesel emissions from the locomotives and experience short-term, periodic reductions in air quality.

Increased rail traffic could also reduce access and pedestrian safety within the park. No existing interior park or access roads are crossed by the rail line. Therefore, access to the park, and by road within the park, should not be affected by the project. However, because the rail line passes within the park, access to some areas would require crossing the rail line. The increase in rail traffic would likely reduce the number of individuals willing to cross the rail line to use other areas of the park. Additionally, pedestrians crossing the rail line would be at risk of injury from passing trains, both being struck by the train and from flying debris.

Although users of Minneopa State Park are currently exposed to disturbances related to rail activity, the low level of this disturbance does not significantly detract from the recreational experience. Operation of this project at all levels of traffic could potentially severely impact the ability of the park to provide a quality recreational experience. Project impacts, particularly at higher levels of traffic, would likely be significant.

State Scientific and Natural Areas

Two state scientific and natural areas are located in the vicinity of the existing rail line. Both are over 0.5 mile from the rail line. Some disturbance to individuals conducting research or participating in educational activities at these areas may occur during construction and operation. However, the distance from the rail line should result in only minimal and indirect impacts to these areas.

State Forests

The existing DM&E rail line passes through approximately 14.0 miles of Richard J. Dorer Memorial Hardwood State Forest. Reconstruction of the existing rail line would have minimal impact on the forest. Reconstruction activities would be restricted to the existing right-of-way and no additional land would be required. Reconstruction noise, equipment, and human activity would likely disturb wildlife and forest visitors in areas adjacent to the rail line. Some trimming or clearing of trees adjacent to the right-of-way may be necessary for reconstruction and safe operation of the rail line. During operation, the increase in rail traffic would result in greater disturbance than is currently occurring. However, disturbance would be primarily in a narrow band adjacent to the rail line. Forest wildlife and visitors would have abundant additional lands away from the rail line to use. Any impacts would be minor and insignificant.

3.2.6.9 Utility Corridors

Numerous utilities of all types are crossed by the existing rail line or utilize the existing right-of-way. Reconstruction and operation of the existing rail line has the potential to damage these utilities, resulting in loss of product, customer service; and in the case of natural gas or petroleum products, potentially dangerous situations. DM&E would need to coordinate with the owners of all utilities crossed by or adjacent to the existing right-of-way to ensure they are properly protected during reconstruction, and determine if they would require relocation or reconstruction to prevent future damage from rail operations.

3.2.7 WATER RESOURCES

3.2.7.1 Surface Water

The existing rail line reconstruction would have 142 water crossings. These would include 91 intermittent stream crossings, 19 perennial stream crossings (including 5 crossings of trout streams), 14 river crossings, 3 lake crossings and 15 irrigation ditch crossings. The proposed rebuild of the existing rail line would require the replacement of the bridges and culverts across the majority of these bodies of water. In addition, where sidings would be located, any bridges and culverts placed would be of increased width to accommodate two rail lines. Tables 2.6, 2.7, and 2.8 provide information on siding locations.

The primary impact from rail line reconstruction and replacement of bridges and culverts across rivers, streams, and lakes would be increases in total suspended solids (TSS) or sediment. These increases could be significant should they occur in protected waters or trout streams. In-channel work during periods of high flow and erosion from adjacent disturbed areas of rail right-of-way could increase TSS concentrations. Temporary increases in TSS concentrations could be significant during reconstruction, but the impact could be mitigated by expediting the work or working during low-flow periods. Failure to adequately stabilize disturbed slopes adjacent to streams could result in increases in erosion and sedimentation in surface waters. Seeding, mulching, and the use of riprap in disturbed areas would reduce erosion during and following reconstruction. These measures should reduce the likelihood of significant impacts to water quality. However, the improper placement of culverts during construction could permanently alter the sediment transport capacity of a stream. This could result in changes to sediment transport resulting in changes in TSS, sediment deposition patterns, and in-stream scouring and erosion downstream of new bridges or culverts. However, no changes in surface drainage patterns should result from the placements of bridges or culverts. The installation of properly sized bridges and culverts, proper maintenance, and periodic clearing of debris would allow water to follow its normal course and not back up into new areas. No significant impacts to surface water in project area waterways should result.

During reconstruction, fuels, lubricating oils, and other potential contaminants would be present at construction sites. In the event of an accidental spill or release of these materials at or near surface waters, these waters could be affected if spilled materials reach a waterway. However, materials would be present in only limited quantities required for the operation of vehicles on the site. No hazardous materials would be stored at the site of water crossings.

Water quality issues associated with operation and maintenance would include erosion and potential contamination. Following construction, establishment of vegetation would minimize the potential for wind and water erosion. However, disturbance of vegetation during maintenance activities or in-stream work required to maintain bridges or culverts, could increase erosion and sedimentation. Reestablishment of vegetation in disturbed areas would be necessary. When possible, in-stream work should be minimized and conducted during low flow periods. However, the minor disturbances associated with maintenance activities should have insignificant impacts on surface waters.

Operational impacts would also include potential spills of hazardous substances and chemical spills. Spills near waterways could introduce contaminants into surface waters, and potentially reduce the vegetative cover of soil adjacent to streams, leading to increased erosion. Because reconstruction of the existing rail line would result in safer rail operations and only limited amounts of potential contaminants are transported by DM&E (Section 3.1.11.1), operational impacts to surface waters are anticipated to be insignificant.

3.2.7.2 Wetlands

Temporary and permanent impacts to wetlands could result from the construction activities associated with rebuilding the existing rail line. Any degradation or loss of wetlands would be considered a significant impact. COE indicated that per Section 404 of the Clean Water Act, mitigation would be required for any impacts resulting from rail line construction under the issued permit. Mitigation would include replacement or enhancement of impacted wetland areas.

The reconstruction activities associated with rebuilding the existing rail line could cause temporary or permanent impacts to approximately 187.8 acres of wetlands (Table 3.1-8) within the right-of-way in Minnesota. Table 3.1-8 provides a county breakdown of wetland acreage within the rail line right-of-way.

Reconstruction activities associated with rebuilding the existing rail line within the existing right-of-way could require construction equipment to work within or travel through wetlands. These activities would result in damage to wetland vegetation, mixing and compaction of wetland soils, and potential alterations in site hydrology. If wetlands occur in areas where sidings would be constructed, portions of these wetlands within the right-of-way would be filled to provide a rail bed for the sidings. Additionally, wetlands adjacent to a rail bed are generally undesirable as they contribute to saturated soil conditions in the rail bed and may cause it to be unstable. During reconstruction, many wetlands within the right-of-way would likely be eliminated in favor of establishment of well-drained areas to keep water away from the rail bed. However, larger wetlands crossed by the existing rail line could not be drained or effective drainage established adjacent to the rail bed. Following reconstruction, wetlands would be expected to continue in these limited areas due to lack of adequate drainage.

In addition to the direct loss of wetlands within the existing right-of-way, wetlands could be indirectly impacted by reconstruction. Soil disturbance adjacent to wetlands and within wetlands in the right-of-way could increase sedimentation in adjacent wetlands. Increased sedimentation could reduce the size, water depth, or quality of these adjacent wetlands, potentially resulting in vegetative changes. Installation of drainage structures could inadvertently drain wetlands outside the right-of-way, resulting in additional wetland losses. Also during construction, the presence of construction equipment, human activity and associated noise would likely disturb wildlife, particularly waterfowl using these wetlands. Wildlife would be displaced from the smaller wetlands to the more remote portions of larger wetlands along the rail line. Displacement of wildlife would decrease the value and function of these wetlands as wildlife habitat.

During project operation and maintenance, impacts to wetlands would be restricted to continued disturbance of wildlife from passing trains and maintenance activities, degradation of wetlands from maintenance related construction activities, and the potential introduction of contaminants in the unlikely event of a spill. Disturbance to wildlife would result from the noise and presence of a train operating over the rail line. Wildlife using areas in proximity to the rail line, including nesting waterfowl would likely be disturbed. In some instances, the frequency of disturbance may result in abandonment of nests in favor of other, more remote areas. However, some individuals would adapt to the disturbance and continue to use these areas. Wetlands may be subject to impacts similar to those during reconstruction when maintenance activities require work in wetlands. While impacts would be similar, they would occur sporadically and in confined areas. Contaminants could enter wetlands, causing damage to vegetation, wildlife, and soils in the event of a spill. However, the improved safety provided by the rebuilt system would make this unlikely to occur.

Overall, the proposed project would likely result in a loss of approximately 187.8 acres of wetlands. Successful mitigation of this loss would be required to prevent significant impacts to this resource.

3.2.7.3 Groundwater and Wells

The rebuild of the existing DM&E rail line in Minnesota should not result in significant impacts to groundwater aquifers or wells in the project area. Possible contamination of surficial aquifers (Section 3.1.5.3.1) in southern Minnesota could result from a fuel or contaminant spill during construction or operation of the rail line. This aquifer is present at the land surface and is extensively used for a water source by communities in the project area. If a fuel or chemical spill occurred during the construction or operation of the rail line, it could cause significant impacts to groundwater aquifers if clean-up operations were not initiated quickly. In addition, spilled fuel or chemicals reaching surface water could result in groundwater contamination. The surficial aquifer is located near the land surface and would be susceptible to migration of contamination through the soils or surface water. If contamination reaches an aquifer, it could spread to other deeper groundwater sources.

Any aquifer or well contamination resulting from use of the DM&E rail line would be considered significant. However, impacts to groundwater are unlikely due to the limited quantity of fuel and contaminants present during construction and the unlikeliness of a train derailment releasing contaminants due to the increased safety of rail operations and the limited amounts of contaminants transported by DM&E.

3.2.8 AIR QUALITY

Reconstruction and operation of the proposed project alternatives would result in changes to the air quality of the project area. While emissions during both reconstruction and operation of the project would generally be consistent with the types of emissions currently present in the project area, increases would be expected.

Reconstruction related impacts to the air quality would generally be localized around the area of construction activity. However, some impacts would likely occur throughout the project area. Local air quality impacts would be short-term and occur at only several isolated, scattered locations at any given time during the two-year reconstruction period. The primary reconstruction impact to air quality would be due to the increase in fugitive dust. These increases would occur from a variety of reconstruction activities. Increased traffic from construction workers and equipment on local unpaved roads would stir dust from these roadways. Any excavation and earthmoving activities would also contribute to dust. As noted in Section 3.2.5.3, many of the project area soils are susceptible to wind erosion. Clearing of the right-of-way and earthmoving activities would expose these soils to increased opportunity for wind erosion. Transport of fill material in uncovered trucks could also contribute to fugitive dust. Following completion of reconstruction and reclamation of the right-of-way, these impacts would no longer be expected to continue.

Emissions from reconstruction vehicles and equipment would also impact air quality. These impacts would primarily be confined to the right-of-way where construction activities would be most concentrated. As noted above, the scattered nature of reconstruction would spread equipment emissions over a large area. Additionally, emissions would be quickly dispersed by wind, preventing them from becoming concentrated. Vehicle and diesel emissions are common and widespread throughout the project area, although they occur at very low levels. They are particularly prevalent in urban areas through which the rail line passes. Air emissions during reconstruction are not anticipated to reduce air quality in the overall project area due to the temporary and scattered nature of reconstruction activities, reconstruction being confined to the rail line right-of-way and the wind dispersion of emissions.

As discussed in the Draft EIS, many residences are located in close proximity to DM&E's existing rail line. At present, the occupants of these residents are exposed to diesel emissions from locomotives hauling DM&E's current rail traffic - an average of 3 trains per day. Should the PRB Expansion Project be approved, this traffic could increase to as many as 37 trains per day. During scoping, several potentially affected residents questioned whether their health would be adversely affected by increased exposure to diesel emissions from locomotives and coal dust that could blow off rail cars hauling coal. SEA has examined these issues.

During rail line operation, in-transit loss of coal from rail cars during project operation is expected to occur, potentially increasing fugitive dust along the rail line. Currently, coal is transported from the mines in the Powder River Basin by UP and BNSF in unit coal trains consisting of uncovered rail cars. Over 270 million tons of coal were transported from these mines in 1997 in this manner. Despite the fact that millions of tons of Powder River Basin coal have moved by open rail car since the 1970's, fugitive coal dust emissions from these coal movements are difficult to quantify.

PRB coal has a high moisture content, averaging about 30 percent moisture[1]. The moisture in the coal tends to reduce fugitive dust compared to drier eastern coals that average about 10 percent moisture.[2] Also, the cooler climate of Minnesota tends to cause the coal to freeze together during colder times of the year, further limiting fugitive coal losses during these periods. During the warmer months, rain mixing with the clay in the PRB coal tends to crust the coal pile and may serve to reduce fugitive coal emissions during transport. Some coal losses would be expected during the drier part of the summer months.

[1] Lick, Robert. 1991. 1991 Keystone Coal Industry Manual. Robert Lick Publisher. Maclean Hunter Publications. Chicago Illinois. 1991

[2] Ibid

SEA identified no detailed studies that provided information on the amount of coal dust lost from rail transportation or the potential problems it could create. SEA contacted numerous State air quality and pollution control agencies to obtain input on the coal dust-loss issue. SEA contacted the Minnesota Pollution Control Agency, South Dakota Department of Environment and Natural Resources (which also provided information on contacts with the North Dakota and Nebraska Departments of Natural Resources), Wyoming Department of Environmental Quality, Colorado Department of Public Health & Environment, and the Missouri Department of Natural Resources. These states were contacted due to their inclusion in the project area, being known to have rail lines over which PRB coal is transported, or both. It was the opinion of these agencies that loss of coal dust does not represent a significant environmental hazard, and that in their experience, loss of coal in the size range to become airborne is an infrequent event. This position is largely based on lack of complaints from persons along the rail routes for coal transportation about coal dust and the agencies' field personnel not observing coal dust blowing from open rail cars or settling along the rail lines. Based on this anecdotal evidence, SEA does not believe fugitive coal dust poses a significant environmental concern. However, it does acknowledge that some fugitive coal dust may be noticed along the rail line, potentially causing inconvenience to adjacent residents and businesses by requiring periodic washing of buildings, vehicles, and other outside surfaces.

SEA also examined the potential impacts related to diesel emissions from locomotives. These impacts are discussed later in this section.

SEA determined that the increases in rail traffic at each analyzed level of operation (20 MNT equal to 8 coal trains per day, 50 MNT equal to 18 coal trains per day, and 100 MNT equal to 34 coal trains per day) would exceed the Board's thresholds, found at 49 CFR 1105.7, for environmental analysis of air quality impacts. These thresholds require SEA to conduct detailed analysis of potential air quality impacts from construction projects that result in an increase of eight or more trains per day in areas classified as attainment for all criteria pollutants. As all counties in the project area are classified as attainment, this threshold applies to SEA's analysis for this project. Additionally, the Board's regulations require SEA to evaluate potential air quality impacts on other portions of DM&E's rail system where rail traffic would exceed this threshold due to the proposed construction project. Therefore, SEA conducted a detailed analysis of potential air quality impacts along the existing DM&E rail line to be reconstructed in Minnesota.

DM&E indicated in its Application that it intended to transport up to 100 MNT of coal per year and that interchanges with other rail carriers are available to route the coal to the users. However, because contracts for coal transportation have not yet been obtained by DM&E, SEA cannot reasonably determine the exact routes over which DM&E coal would be transported.

Therefore, SEA cannot determine the rail lines which would exceed the Board's thresholds. SEA determined it reasonable for all the increases in rail traffic to occur along the existing DM&E main line. Thus, SEA performed a system-wide analysis to determine the potential impacts of the proposed project Extension Alternatives on air quality that would occur as a result of this project along the entire DM&E mainline. SEA's analysis included proposed emissions increases along the new Extension Alternatives and DM&E's existing mainline across Minnesota and South Dakota. SEA's analysis of air quality impacts along the existing rail main line in Minnesota is contained in this section. Air quality impacts from rail yards along the existing rail line in Minnesota are included in Section 3.5.

SEA performed a system-wide air quality analysis to analyze the potential impacts of the proposed project on air quality resulting from the overall increase in emissions (in tons per year) for sulfur dioxide (SO_2), hydrocarbons (HC) [3] also referred to as volatile organic compounds (VOC), particulate matter (PM), nitrogen oxides (NO_x), carbon monoxide (CO), and lead (Pb). Emissions during operation would result from the exhaust of locomotive engines on line and in rail yards. Emissions from rail yards are discussed in Section 3. Additionally, vehicles stopped at grade crossings contribute to air emissions.

The emissions changes resulting from the operation of locomotives necessary for this project are given on a state and county-wide basis. The emission calculations and methodology are provided in Appendix E, Air Quality Analysis Methodology. SEA compared the results of its analysis to the Environmental Protection Agency's (EPA's) major source thresholds for stationary sources. This use of threshold screening levels is consistent with previous SEA studies. EPA's major source thresholds for stationary sources provide the emissions level for each criteria pollutant at which a stationary source of that pollutant would be required to apply for a major construction or operating permit. No thresholds are currently established for mobile emission sources, such as locomotives. Therefore, SEA used the EPA threshold for stationary sources as a reference. If the projected county-wide emissions levels exceed the air quality screening levels shown in Table 3.2-1, then SEA performed a more detailed air dispersion modeling.

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[3] Hydrocarbons are a category of chemical substances containing the elements carbon and hydrogen. A variety of different hydrocarbon compounds are emitted by locomotives. EPA's locomotives emission factors were used to calculate the hydrocarbon emissions resulting from this project. Hydrocarbon emissions are a consideration of this analysis as many of them compose a subgroup of compounds known as volatile organic compounds (VOCs). VOCs can easily combine with other chemicals, including those in the air to form ozone, one of EPA's criteria pollutants. Generally, one ton of VOC emissions will react to produce one ton of ozone. Therefore, VOC emissions provide a surrogate for potential ozone production. However, EPA's emission factors for locomotives do not include VOC emissions, only hydrocarbons. Therefore, SEA's use of hydrocarbon emissions as a surrogate for VOCs is overly conservative as only the VOC component of hydrocarbons would produce ozone.

SEA identified 10 counties that meet the STB threshold of eight trains per day for air quality analysis in Minnesota. For each county, SEA summed air emissions increases from changes on the existing rail line and compared them to the air emission screening thresholds shown in Table 3.2-1.

Table 3.2-1
County Emissions Screening Levels

Pollutant	Area Designation	Emissions Screening Levels (tons/year)
Nitrogen Oxides (NO_X)	1. Attainment/Maintenance for NO_2 2. Marginal/Moderate Ozone 3. Ozone Attainment	100
	Ozone Serious Non-attainment	50
	Ozone Severe Non-attainment	25
Volatile Organic Compounds (VOCs)	1. Attainment/Maintenance for Ozone 2. Marginal/Moderate Ozone Non-attainment	100
	Ozone Serious Non-attainment	50
	Ozone Severe Non-attainment	25
Carbon Monoxide (CO)	1. Attainment/Maintenance for CO 2. Marginal/Moderate Ozone Non-attainment	100
	CO Serious Non-attainment	50
Particulate Matter less than 10 microns (PM_{10})	1. PM_{10} Attainment or Maintenance 2. PM_{10} Moderate Non-attainment	100
	PM_{10} Serious Non-attainment	70
Sulfur Dioxide (SO_2)	SO_2 Attainment or Non-attainment	100
Lead (Pb)	Pb Attainment or Non-attainment	0.6

A summary of the potential emission increases at the 20 million ton operating level are shown in Table 3.2-2. Increases in bold indicate they are greater than EPA's major source thresholds for stationary sources provided in Table 3.2-1.

Table 3.2-2
Comparison of Emission Increases in Minnesota to EPA Thresholds for the 20 million net tons/year

County	NO_X (tpy)*		VOC (tpy)		CO (tpy)		PM_{10} (tpy)		SO_2 (tpy)		Pb (tpy)	
	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold
Winona	**139**	100	10	100	27	100	7	100	17	100	0.001	0.6
Olmsted	**155**	100	11	100	30	100	7	100	19	100	0.001	0.6
Dodge	91	100	6	100	17	100	4	100	11	100	0.001	0.6
Steele	93	100	7	100	18	100	4	100	11	100	0.001	0.6
Waseca	**110**	100	8	100	21	100	5	100	13	100	0.001	0.6
Blue Earth	**189**	100	13	100	2136	100	9	100	23	100	0.001	0.6
Brown	**203**	100	14	100	39	100	10	100	24	100	0.001	0.6
Redwood	**122**	100	9	100	23	100	6	100	15	100	0.001	0.6
Lyon	**127**	100	9	100	24	100	6	100	15	100	0.001	0.6
Lincoln	**109**	100	8	100		100	5	100	13	100	0.001	0.6

* tons per year

A summary of potential emissions increases for the 50 million tons alternative is shown in Table 3.2-3. Increases in bold indicate they are greater than EPA's major source thresholds for stationary sources provided in Table 3.2-1.

Table 3.2-3
Comparison of Emission Increases in Minnesota to EPA Thresholds for the 50 million net tons/year

County	NO_X (tpy)		VOC (tpy)		CO (tpy)		PM_{10} (tpy)		SO_2 (tpy)		Pb (tpy)	
	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold
Winona	**310**	100	22	100	59	100	15	100	37	100	0.001	0.6
Olmsted	**345**	100	24	100	66	100	17	100	41	100	0.001	0.6
Dodge	**202**	100	14	100	39	100	10	100	24	100	0.001	0.6
Steele	**207**	100	15	100	40	100	10	100	25	100	0.001	0.6
Waseca	**246**	100	17	100	47	100	12	100	29	100	0.001	0.6
Blue Earth	**422**	100	30	100	81	100	20	100	51	100	0.001	0.6
Brown	**453**	100	32	100	87	100	22	100	54	100	0.001	0.6
Redwood	**272**	100	19	100	52	100	13	100	33	100	0.001	0.6
Lyon	**283**	100	20	100	54	100	14	100	34	100	0.001	0.6
Lincoln	**242**	100	17	100	46	100	12	100	29	100	0.001	0.6

A summary of potential emissions increases for the 100 million tons alternative is shown in Table 3.2-4. Increases in bold indicate they are greater than EPA's major source thresholds for stationary sources provided in Table 3.2-1.

Table 3.2-4
Comparison of Emission Increases in Minnesota to EPA Thresholds for the 100 million net tons/year

County	NO_X (tpy)		VOC (tpy)		CO (tpy)		PM_{10} (tpy)		SO_2 (tpy)		Pb (tpy)	
	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold
Winona	**591**	100	42	100	**113**	100	28	100	71	100	0.001	0.6
Olmsted	**659**	100	46	100	**126**	100	32	100	79	100	0.001	0.6
Dodge	**386**	100	27	100	74	100	19	100	46	100	0.001	0.6
Steele	**395**	100	28	100	76	100	19	100	47	100	0.001	0.6

Table 3.2-4
Comparison of Emission Increases in Minnesota to EPA Thresholds for the 100 million net tons/year

County	NO_X (tpy)		VOC (tpy)		CO (tpy)		PM_{10} (tpy)		SO_2 (tpy)		Pb (tpy)	
	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold
Waseca	**469**	100	33	100	90	100	23	100	56	100	0.001	0.6
Blue Earth	**806**	100	57	100	**154**	100	39	100	96	100	0.001	0.6
Brown	**865**	100	61	100	**166**	100	42	100	**104**	100	0.001	0.6
Redwood	**519**	100	37	100	99	100	25	100	62	100	0.001	0.6
Lyon	**541**	100	38	100	**104**	100	26	100	65	100	0.001	0.6
Lincoln	**462**	100	33	100	88	100	22	100	55	100	0.001	0.6

For the 20 and 50 million ton per year options, SEA predicted only NO_X emissions would exceed the major source thresholds in several counties. For the 100 million ton per year option, SEA predicted NO_X, CO, and SO_2 emissions would exceed the major source thresholds in several counties. Therefore, the results of the CALPUFF air dispersion modeling were reviewed to determine if the impacts from the increase in rail traffic would be expected to exceed the National Ambient Air Quality Standards (NAAQS) or Prevention of Significant Deterioration (PSD) increments. The NAAQS are an air quality standard established by EPA for the protection of human health and welfare. They provide the maximum allowable concentrations for a pollutant in a particular county, and take into consideration emissions inside and outside the county that could affect the county. The NAAQS for the various pollutants are:

· NO_X - 100 micrograms/cubic meter (annual average),
· CO - 40,000 micrograms/cubic meter (1 hour average),
· CO - 10,000 micrograms/cubic meter (8 hour average),
· SO_2 - 80 micrograms/cubic meter (annual average),
· SO_2 - 365 micrograms/cubic meter (24 hour average),
· SO_2 - 1,300 micrograms/cubic meter (3 hour average - secondary standard),
· PM_{10} - 50 micrograms/cubic meter (annual average),
· PM_{10} - 150 micrograms/cubic meter (24 hour average).

PSD increments are established by EPA. PSD standards have been established which serve to keep areas which have very good air quality from being degraded to NAAQS by allowing only certain increments (increases) above existing background air quality conditions. PSD allowable increments are not the same for all areas of the country. For purposes of allowable increases, areas of the county have been designated as either Class I or Class II.

A Class I airshed is an area designated by Congress as having "special national or regional value from a natural, scenic, recreational, or historical perspective." Examples of Class I areas include national parks and wilderness areas larger than 5,000 acres and other areas designated by the states or Tribes. Class I areas are designed to have the best air quality and, therefore, have the smallest allowable increments. Designation as a PSD Class I (Class I) area affords the area an increased level of protection for its air quality. PSD Class I increments are more stringent than Class II increment and are:

- NO_x - 2.5 microgram/cubic meter (annual average)
- SO_2 - 2 micrograms/cubic meter (annual average)
- SO_2 - 5 microgram/cubic meter (24 hour average)
- SO_2 - 25 micrograms/cubic meter (3 hour average)
- PM_{10} - 4 microgram/cubic meter (annual average)
- PM_{10} - 8 micrograms/cubic meter (24 hour average)

No Class I airsheds occur along the existing rail line in Minnesota.

Class II areas have larger allowable increases. Class II increments have been identified for NO_X, SO_2, and PM_{10} and are:

- NO_x - 25 microgram/cubic meter (annual average),
- SO_2 - 20 micrograms/cubic meter (annual average),
- SO_2 - 91 microgram/cubic meter (24 hour average),
- SO_2 - 512 micrograms/cubic meter (3 hour average),
- PM_{10} - 17 microgram/cubic meter (annual average),
- PM_{10} - 30 micrograms/cubic meter (24 hour average).

All the alternatives would be constructed through PSD Class II areas. Therefore, PSD Class II increments are the amount emissions of a particular pollutant can be increased above the existing emission level for that pollutant in a particular county. However, they do not enable emissions for a particular pollutant to exceed the NAAQS standards. For example, the NAAQS for NO_x is 100 microgram/cubic meter. If the existing NO_x level is 25 microgram/cubic meter, a new emissions source would have 75 microgram/cubic meter of emissions before it would reach the NAAQS level. However, PSD Class II increments would only allow the emissions to increase by 25 microgram/cubic meter. Should the existing emissions be 80 microgram/cubic meter for NO_X, while PSD Class II increments would allow it to be increased by 25 microgram/cubic meter, NAAQS standards would only allow an increase of 20 microgram/cubic meter.

SEA used the CALPUFF model to determine potential visibility impacts to Class I airsheds as discussed below. SEA also used the results of the CALPUFF model to determine screening-level ambient air quality impacts near the rail line alternatives ("near-field" impacts) for comparison to the NAAQS and PSD Class II increments. The PSD Class II increments are the amounts of emissions increases above which a source is considered to "significantly deteriorate" the air quality of a particular area. SEA performed this analysis to determine if the emissions increases from the proposed alternatives could cause or contribute to a violation of the applicable state and Federal ambient air quality standards or PSD Class II increments. SEA's analysis showed that maximum projected ambient concentrations would be significantly lower than the ambient air quality standards or Class II increments. That is, emissions from the railroad are not expected to cause or contribute to a violation of the applicable state or Federal ambient air quality standards. The modeling methodology is described in Appendix E (reference *Attachment 1: CALPUFF Technical Support Document*).

EPA is the Federal agency responsible for implementation of air emissions standards for the protection of human health and welfare. In addition to the NAAQS and PSD increment, EPA announced in December of 1997 a rule to reduce locomotive diesel emissions in an attempt to further protect human health and welfare. This rule established emissions standards for new and rebuild locomotives concerning NOx, HC (a photo reactive pollutant that many form ozone), CO and PM. The new rule consists of a tiered reduction in emssions, with Tier I taking effect on January 1, 2000 and Tier II taking effect on January 1, 2005. EPA projects these new locomotive emissions standards would reduce current locomotive emisisons of NOx by nearly two-thirds and HC and PM by half, even considering increases in locomotive operations. These reductions would limit overall exposure of the public, including those living in proximity to rail lines. As a result, EPA's locomotive emission standards would serve to protect the public health and welfare of individuals living in proximity to the existing and proposed DM&E rail line.

As trains pass through grade intersections, automobiles and other on-road vehicles are required to stop short of the intersection on either side of the crossing. While these vehicles are delayed, their engines are typically idling until the train passes. If a significant number of vehicles idle for a sufficient length of time, it is possible that concentrations of carbon monoxide (CO) could be elevated in the vicinity of the crossing.

As part of the environmental analysis, delay times at the crossings were reviewed to determine numbers of the vehicles that could potentially be queued at any given time and the average vehicle delay that would be experienced by these vehicles. Vehicle queues and average delay times experienced under the current condition were compared with projected vehicle queues and average delay times for DM&E proposed levels of operation. The results of this analysis show that the number of vehicles queued at any given time and the average delay time experienced by each of these vehicles, will decrease due to the increased train speeds. The average number of vehicles queued at any given time prior to construction ranges from 12.5 to 44.7 vehicles, while the number of vehicles queued at any given time after construction ranges from 6.3 to 25.6. Similarly, the average pre-construction delay time per vehicle ranges from 1.6 to 2.4 seconds per vehicle while the average post-construction delay time per vehicle is approximately 1.5 seconds per vehicle. This results in a reduction, depending on the intersection, of .01 to 0.9 seconds per vehicle (Section 3.2.1.1).

Although more and longer trains will pass through the intersections on a daily basis, each train will spend a shorter period of time crossing each intersection due to its increased speed. Therefore, fewer cars will be queued cumulatively at any given time. Additionally, the average delay time for each of these queued vehicles will be shorter since the trains will pass through the intersections in a shorter period of time than in the pre-construction scenario. As such, emissions for idling vehicles will be dispersed on a more frequent basis and have a similar chance of accumulation in the vicinity of the crossing. The potential for increased concentrations of CO in the vicinity of the rail crossings, once construction is complete, will be minimal.

3.2.9 NOISE AND VIBRATION

3.2.9.1 Noise

The reconstruction and operation of the proposed project would result in the generation of noise along the existing rail line. During reconstruction, portions of the rail line would be taken out of service for short periods, ranging from several hours to a few days. During this time, rail traffic and the associated noise from operating locomotives and trains would cease in these areas. During reconstruction, temporary noise would be generated from operation of construction vehicles and heavy equipment used for clearing, rail, tie, and ballast removal, and any rail bed work. These impacts would occur only during the period required to reconstruct the existing rail line in a particular area. Replacement of culverts and bridges would take from a day or two up to a few weeks. Following installation of culverts and bridges, the rail bed would be prepared. Rail bed preparation could occur concurrently or immediately following culvert and bridge construction or could occur some time afterward. Once the rail bed is prepared, ballast, rail, and ties would be installed at approximately one mile per day. Once completed, another section of rail line would be taken out of service and reconstruction activities relocated to the new area. In this way, impacts from reconstruction noise would be moved along the rail line. Actual noise impacts would only occur to adjacent areas along limited portions of the rail line at any given time and only for short duration.

Because DM&E would continue to be a functioning railroad during the reconstruction period, breaks in reconstruction may be necessary to allow movement of trains. In areas where sidings would not be constructed, reconstruction could be suspended for short periods to allow train movement. These sections of rail line would then experience existing levels of rail traffic and associated rail operation noise. In areas where sidings would be constructed, construction may occur adjacent to the mainline, allowing trains to continue to operate. Adjacent areas would be exposed to increased noise due to both rail operations and construction occurring simultaneously. Following completion of siding construction, trains could operate over the siding, allowing reconstruction of the main line. Noise in these areas would be generated by reconstruction activities as well as existing levels of train traffic for the duration of the reconstruction period.

Although reconstruction activities and associated noise would be temporary, only occurring until reconstruction is completed, they could occur around the clock in order to complete reconstruction activities as quickly as possible in a particular area and allow rail movements to continue. Round-the-clock reconstruction would be dictated by special conditions[4] and be highly localized. Normally, reconstruction would be expected to occur in two shifts, from approximately 6 a.m. to 11 p.m., with equipment maintenance occurring between 11 p.m. and 6 a.m. Impacts from reconstruction noise would primarily involve disturbance to residences near the rail line. However, the rural nature of much of the project area limits the total number of noise receptors that would experience increased noise during reconstruction.

Following reconstruction, operation of the existing DM&E rail line would result in an increase in rail traffic over the rebuilt portion of the DM&E system. At the level of rail traffic anticipated during the initial operation of the project (20 MNT, which would be equal to 8 trains per day, 4 loaded and 4 empty), SEA determined that the rebuild portion of the proposed project would meet the Board's environmental analysis thresholds for noise set forth at 49 CFR 1105.7(e)(6). The Board's thresholds for noise analysis are:

[4] Special conditions are noted by DM&E, however, no definition of parameters for these conditions is provided. The term, special conditions, is not defined.

- all rail lines where rail traffic would increase by eight or more trains per day, or
- all rail lines for which gross ton-miles transported annually increases by 100 percent or more.

As traffic levels increase, these thresholds would continue to be exceeded. Therefore, SEA conducted a detailed evaluation of potential noise impacts from operation of the proposed project. Based on information provided in DM&E's Application to the Board, indicating a monetary break-even level of rail traffic equal to 8 coal trains per day, increasing over time to as many as 34 trains per day, SEA determined a detailed analysis of noise impacts was appropriate for reconstruction of the existing rail line.

Therefore, SEA performed an analysis of the entire length of the existing DM&E rail line in Minnesota to determine the potential noise impacts of the proposed increases in rail traffic. SEA calculated the distance (contour) at which the average daily noise level (L_{dn}) would be equal to 65 decibels (dB) on an A-weighted scale,[5] or would experience an increase of 3 dBA L_{dn} or greater, as specified in the Board's rules. Distances less than the 65 dBA L_{dn} contour would experience average daily noise levels greater than 65 dBA. Federal agencies, including the Federal Aviation Administration and Department of Housing and Urban Development, consider noise levels up to 65 dBA L_{dn} to be compatible with most noise sensitivereceptors. These agencies, as well as the Board, agree that noise levels at or above 65 dBA are adverse. SEA also calculated the 70 dBA L_{dn} contour. The 70 dBA L_{dn} noise level was established by SEA in the Conrail Acquisition, Finance Docket No.33388, as the noise level at and above which mitigation for noise impacts would be considered. Additionally, SEA considers noise levels at and above 70 dBA L_{dn} to be significantly adverse.

Noise contours were calculated for both the existing and proposed operating conditions, at proposed coal transportation levels of 20 MNT, 50 MNT, and 100 MNT. These levels of operation were selected because exact levels of train traffic are dependent upon DM&E negotiating contracts for coal transportation. The 20 MNT level is roughly the break-even level for the project and therefore represents the minimum level of rail traffic. DM&E projected in its Application to the Board a level equivalent to 50 MNT after beginning operation, potentially expanding to a maximum of 100 MNT within seven years. As 50 MNT appears to be a reasonably foreseeable level of operation and 100 MNT was indicated as the maximum level their system could accommodate, these levels of operation were also evaluated. In Minnesota, contours were calculated considering existing DM&E traffic for 11 (20 MNT), 21 (50 MNT), and

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[5] A-weighted scale considers only those frequencies of noise that are audible to the human ear.

37 (100 MNT) coal trains per day. SEA counted noise sensitive receptors (e.g. schools, hospitals, churches, and residences) within the noise contours for the current condition and under each of the proposed operating scenarios.

Noise sources from rail operations include diesel locomotive engine and exhaust noise, wheel/rail interaction noise (collectively referred to as wayside noise), and horn noise. Wayside noise affects all locations in the vicinity of the rail line. Horn noise is an additional noise source at and in the vicinity of grade crossings where trains are required by law to sound a horn for safety. Both types of noise diminish with distance. Figure 3-4 provides a sample of noise levels created by various activities.

The areas along DM&E's existing rail line and the communities that would experience increases in rail traffic or activity meeting the Board's environmental analysis threshold for Minnesota are listed in Tables 3.2-5 to 3.2-20. Tables 3.2-5 through 3.2-8 show the communities, within their respective counties, with the number of noise sensitive receptors expected to experience noise levels exceeding 65 dBA L_{dn} for each community and the county. County totals are in bold and include both the sensitive receptors within and outside the communities. Noise sensitive receptors within the 65 dBA L_{dn} noise level due to wayside noise, wayside and horn noise, and horn noise only are presented. Tables 3.2-9 through 3.2-12 show the communities, within their respective counties, with the number of noise sensitive receptors exceeding 70 dBA L_{dn}. Tables 3.2-13 and 3.2-14 provide noise sensitive receptor counts for the portion of the CP rail line in Winona, Minnesota expected to potentially experience increases in rail traffic due to interchange with DM&E.[6] A comparison of the existing conditions at both these levels are shown in Tables 3.2-15 through 3.2-20. County totals are shown in bold. Negative numbers reflect a reduction in the number of noise sensitive receptors within a given noise impact category as discussed below.

[6] SEA would not normally evaluate down-line impacts of a construction project on rail line owned and operated by another rail carrier. However, in this case, because SEA determined it appropriate to evaluate increases in rail traffic due to the eastward transport of coal all the way to the eastern terminus of DM&E's system because no contracts for coal are in place and no levels of rail interchange can be assumed, SEA recognized that DM&E's coal trains would have to go somewhere once arriving at the eastern end of the system. Based on an evaluation of projected coal markets discussed in the Board's December 10, 1998 decision, SEA determined the majority of coal traffic reaching Winona would interchange with CP for movement south, through Winona. Because it is reasonable that such movement of trains would occur and the citizens and elected officials in Winona expressed concern for noise, air quality, transportation, and safety in their community due to this increase in rail traffic, SEA determined it appropriate to consider these potential impacts along the CP rail line in Winona.

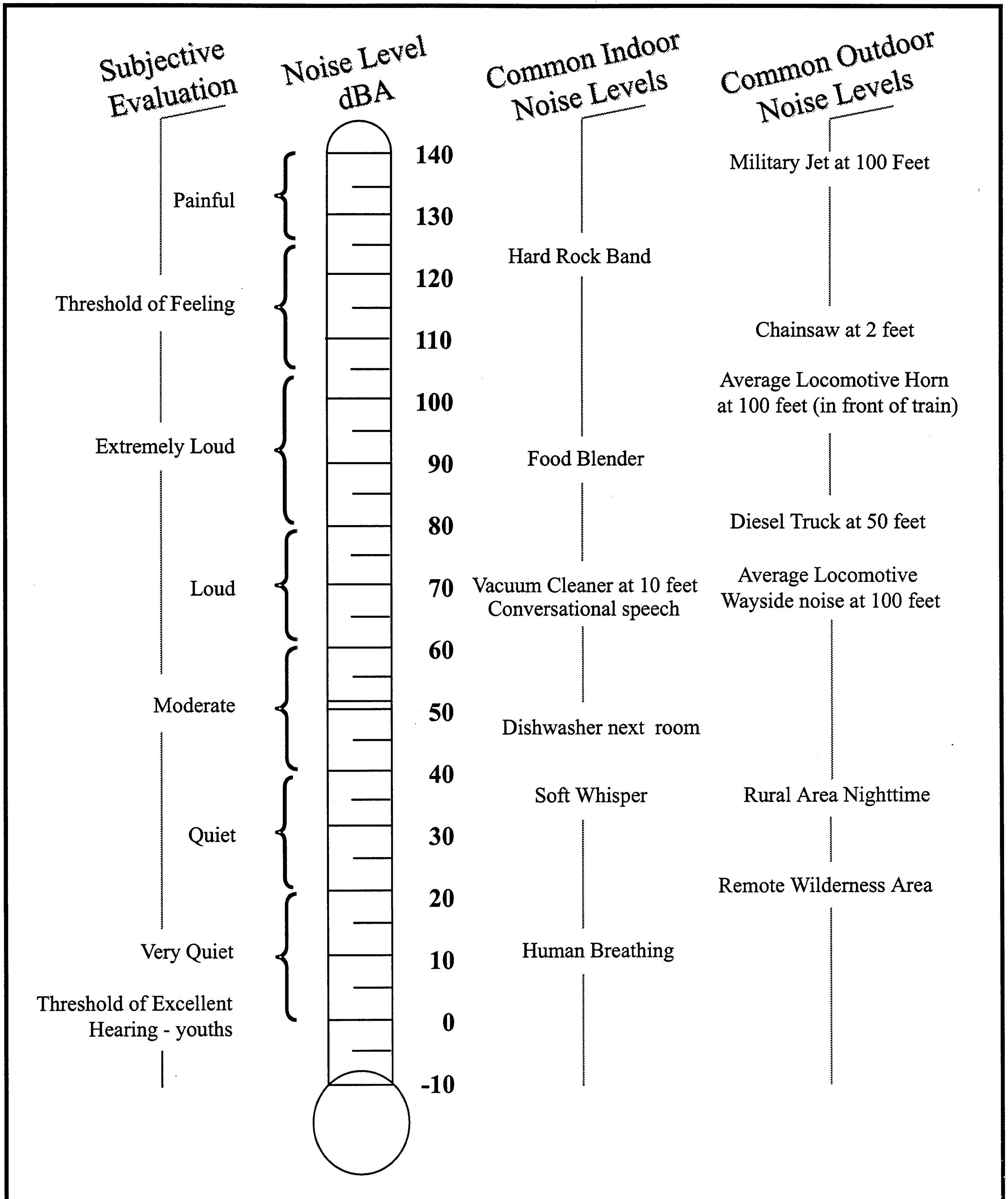

Figure 3-4
POWDER RIVER BASIN EXPANSION PROJECT
SAMPLE NOISE LEVELS

In communities that are entirely contained within the noise contours for horn noise only at lower levels of rail traffic, the total number of noise sensitive receptors in the community would not increase, or only slightly increase, at higher rail traffic levels. However, the number of noise sensitive receptors affected by wayside and horn noise would increase as these receptors are exposed to increased levels and different types of noise. Additional noise sensitive receptors that are counted within the wayside and horn noise contour would be subtracted from the total affected by horn noise only. Along some sections of the existing rail line, train traffic levels for existing conditions were higher than the projected minimum level of 11 trains due to switching or wayfreight movements. Reductions which occur for the wayside and horn noise category may result in a negative number for the difference of noise sensitive receptors shown in these noise categories. In these communities, noise sensitive receptor density is such that all or most of the noise sensitive receptors were contained within the boundary for the noise contour under the existing conditions. A change in the level of train traffic and the noise generated at the evaluated levels of operation was not found to significantly increase the total number of receptors, only change the category in which they were counted.

Table 3.2-5
Existing Rail Line - Minnesota
Number of Existing Noise Sensitive Receptors - 65 dBA L_{dn}

County and Communities	Wayside	Wayside/horn	Horn	Total
Winona	**15**	**72**	**819**	**906**
Goodview	0	0	119	119
Minnesota City	7	5	44	56
Stockton	0	13	61	74
Lewiston	0	14	201	215
Utica	0	13	35	48
St. Charles	0	24	326	350
Olmsted*	**0**	**5**	**320**	**325**
Dover	0	5	75	80
Eyota	0	0	238	238
Dodge	**0**	**78**	**762**	**840**
Kasson	0	39	238	277
Dodge Center	0	26	346	372
Claremont	0	8	152	160
Steele*	**1**	**6**	**35**	**42**
Meriden	0	6	25	31

Table 3.2-5
Existing Rail Line - Minnesota
Number of Existing Noise Sensitive Receptors - 65 dBA L_{dn}

County and Communities	Wayside	Wayside/horn	Horn	Total
Waseca	**0**	**68**	**908**	**976**
Waseca	0	37	652	689
Janesville	0	21	214	235
Smiths Mill	0	1	18	19
Blue Earth*	**2**	**5**	**92**	**99**
Smiths Mill	0	2	3	5
Judson	0	2	41	43
Cambria	0	0	33	33
Brown	**4**	**41**	**1,486**	**1,531**
New Ulm	0	11	811	822
Essig	0	0	21	21
Sleepy Eye	0	0	268	268
Cobden	0	1	15	16
Springfield	0	21	233	254
Redwood	**0**	**6**	**332**	**338**
Sanborn	0	0	81	81
Lamberton	0	2	97	99
Revere	0	0	34	34
Walnut Grove	0	4	109	113
Lyon	**0**	**1**	**250**	**251**
Tracy	0	0	125	125
Garvin	0	0	28	28
Balaton	0	1	86	87
Burchard	0	0	4	4
Lincoln	**0**	**7**	**256**	**263**
Tyler	0	1	125	126
Lake Benton	0	6	99	105
Verdi	0	0	23	23

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-6
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 65 dBA L_{dn} for 20 MNT

County and Communities	Number of Noise Sensitive Receptors for 11 Trains			
	Wayside	Wayside/horn	Horn	Total
Winona	**22**	**174**	**893**	**1,089**
Goodview	4	9	127	140
Minnesota City	8	24	86	118
Stockton	1	12	77	90
Lewiston	0	42	244	286
Utica	1	24	29	54
St Charles	0	60	329	389
Olmsted*	**0**	**19**	**322**	**341**
Dover	0	8	76	84
Eyota	0	11	239	250
Dodge	**20**	**83**	**764**	**867**
Kasson	20	42	242	304
Dodge Center	0	28	350	378
Claremont	0	10	154	164
Steele*	**1**	**6**	**35**	**42**
Meridan	0	6	25	31
Waseca	**1**	**84**	**911**	**996**
Waseca	1	57	653	711
Janesville	0	23	241	264
Smiths Mill	0	3	16	19
Blue Earth*	**3**	**10**	**92**	**105**
Smiths Mill	0	2	3	5
Judson	0	5	42	47
Cambria	0	1	32	33
Brown	**26**	**150**	**1,584**	**1,760**
New Ulm	23	89	827	939
Essig	0	1	25	26
Sleepy Eye	0	22	396	418
Cobden	0	1	18	19
Springfield	0	33	254	287

Table 3.2-6
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 65 dBA L_{dn} for 20 MNT

County and Communities	Number of Noise Sensitive Receptors for 11 Trains			
	Wayside	Wayside/horn	Horn	Total
Redwood	**2**	**10**	**453**	**465**
Sanborn	0	2	125	127
Lamberton	0	3	109	112
Revere	0	0	38	38
Walnut Grove	2	5	169	176
Lyon	**0**	**9**	**430**	**439**
Tracy	0	6	217	223
Garvin	0	0	55	55
Balaton	0	3	150	153
Burchard	0	0	4	4
Lincoln	**0**	**19**	**366**	**385**
Tyler	0	0	215	215
Lake Benton	0	16	121	137
Verdi	0	2	26	28

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-7
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors -65 dBA L_{dn} for 50 MNT

County and Community	Number of Noise Sensitive Receptors for 21 Trains			
	Wayside	Wayside/horn	Horn	Total
Winona	**48**	**259**	**1,169**	**1,476**
Goodview	0	51	107	158
Minnesota City	32	20	96	148
Stockton	2	19	91	112
Lewiston	0	52	345	397
Utica	1	31	37	69
St Charles	0	81	478	559

Table 3.2-7
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors -65 dBA L_{dn} for 50 MNT

County and Community	Number of Noise Sensitive Receptors for 21 Trains			
	Wayside	Wayside/horn	Horn	Total
Olmsted*	**3**	**32**	**417**	**452**
Dover	2	16	89	107
Eyota	0	16	318	334
Dodge	**30**	**171**	**1,111**	**1,312**
Kasson	30	61	434	525
Dodge Center	0	75	459	534
Claremont	0	30	183	213
Steele*	**5**	**15**	**37**	**57**
Meridan	3	14	21	38
Waseca	**1**	**166**	**1,232**	**1,399**
Waseca	0	122	859	981
Janesville	1	35	349	385
Smiths Mill	0	7	10	17
Blue Earth*	**3**	**35**	**63**	**101**
Smiths Mill	0	5	0	5
Judson	0	12	33	45
Cambria	0	12	22	34
Brown	**49**	**241**	**2,142**	**2,432**
New Ulm	35	103	1,063	1,201
Essig	0	2	27	29
Sleepy Eye	4	59	574	637
Cobden	0	0	0	0
Springfield	2	63	418	483
Redwood	**3**	**51**	**626**	**680**
Sanborn	0	8	162	170
Lamberton	0	14	179	193
Revere	0	7	42	49
Walnut Grove	2	22	223	247

Table 3.2-7
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors -65 dBA L_{dn} for 50 MNT

County and Community	Number of Noise Sensitive Receptors for 21 Trains			
	Wayside	**Wayside/horn**	**Horn**	**Total**
Lyon	**0**	**42**	**702**	**744**
Tracy	0	15	418	433
Garvin	0	6	81	87
Balaton	0	17	179	196
Burchard	0	1	3	4
Lincoln	**1**	**51**	**495**	**547**
Tyler	0	16	298	314
Lake Benton	0	30	155	185
Verdi	0	3	30	33

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-8
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors -65 dBA L_{dn} for 100 MNT

County and Communities	Number of Noise Sensitive Receptors for 37 Trains			
	Wayside	**Wayside/horn**	**Horn**	**Total**
Winona	**79**	**444**	**1,278**	**1,801**
Goodview	0	66	92	158
Minnesota City	52	32	114	198
Stockton	7	35	100	142
Lewiston	0	101	355	456
Utica	1	41	23	65
St Charles	0	131	593	724
Olmsted*	**6**	**78**	**456**	**540**
Dover	4	25	89	118
Eyota	0	49	354	403

Table 3.2-8
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors -65 dBA L_{dn} for 100 MNT

County and Communities	Number of Noise Sensitive Receptors for 37 Trains			
	Wayside	Wayside/horn	Horn	Total
Dodge	**59**	**266**	**1,369**	**1,694**
Kasson	59	87	650	796
Dodge Center	0	120	469	589
Claremont	0	48	170	218
Steele*	**11**	**21**	**31**	**63**
Meridan	9	19	15	43
Waseca	**2**	**410**	**1,532**	**1,944**
Waseca	0	321	1,050	1,371
Janesville	1	75	447	523
Smiths Mill	0	10	10	20
Blue Earth*	**5**	**60**	**73**	**138**
Smiths Mill	0	5	1	6
Judson	0	23	32	55
Cambria	0	20	15	35
Brown	**80**	**502**	**2,813**	**3,395**
New Ulm	49	249	1,411	1,709
Essig	0	11	18	29
Sleepy Eye	14	111	685	810
Cobden	0	7	19	26
Springfield	2	100	648	750
Redwood	**4**	**136**	**702**	**842**
Sanborn	0	32	141	173
Lamberton	0	37	252	289
Revere	0	14	37	51
Walnut Grove	0	52	248	300
Lyon	**0**	**70**	**904**	**974**
Tracy	0	27	588	615
Garvin	0	10	78	88
Balaton	0	28	207	235
Burchard	0	1	3	4

Table 3.2-8
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors -65 dBA L_{dn} for 100 MNT

County and Communities	Number of Noise Sensitive Receptors for 37 Trains			
	Wayside	Wayside/horn	Horn	Total
Lincoln	**1**	**103**	**580**	**684**
Tyler	0	38	331	369
Lake Benton	0	57	195	252
Verdi	0	3	30	33

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-9
Existing Rail Line - Minnesota
Number of Existing Noise Sensitive Receptors - 70 dBA L_{dn}

County and Communities	Wayside	Wayside/horn	Horn	Total
Winona	**6**	**11**	**315**	**332**
Goodview	0	0	0	0
Minnesota City	0	0	0	0
Stockton	0	0	24	24
Lewiston	0	0	83	83
Utica	0	0	43	43
St. Charles	4	11	150	165
Olmsted*	**0**	**2**	**134**	**136**
Dover	0	2	44	46
Eyota	0	0	89	89
Dodge	**12**	**31**	**341**	**384**
Kasson	12	13	104	129
Dodge Center	0	11	162	173
Claremont	0	4	64	68
Steele*	**0**	**2**	**22**	**24**
Meriden	0	2	18	20

Table 3.2-9
Existing Rail Line - Minnesota
Number of Existing Noise Sensitive Receptors - 70 dBA L_{dn}

County and Communities	Wayside	Wayside/horn	Horn	Total
Waseca	**0**	**24**	**292**	**316**
Waseca	0	24	200	224
Janesville	0	0	77	77
Smiths Mill	0	0	12	12
Blue Earth*	**1**	**1**	**53**	**55**
Smiths Mill	0	1	4	5
Judson	0	0	24	24
Cambria	0	0	21	21
Brown	**6**	**33**	**884**	**923**
New Ulm	6	6	422	434
Essig	0	0	11	11
Sleepy Eye	0	8	267	275
Cobden	0	0	9	9
Springfield	0	19	150	169
Redwood	**0**	**0**	**132**	**132**
Sanborn	0	0	35	35
Lamberton	0	0	28	28
Revere	0	0	17	17
Walnut Grove	0	0	48	48
Lyon	**0**	**0**	**60**	**60**
Tracy	0	0	22	22
Garvin	0	0	8	8
Balaton	0	0	25	25
Burchard	0	0	1	1
Lincoln	**0**	**0**	**101**	**101**
Tyler	0	0	37	37
Lake Benton	0	0	57	57
Verdi	0	0	5	5

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-10
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for 20 MNT

County and Communities	Number of Noise Sensitive Receptors for 11 Trains			
	Wayside	Wayside/horn	Horn	Total
Winona	**6**	**17**	**372**	**395**
Goodview	0	0	0	0
Minnesota City	0	0	0	0
Stockton	0	2	41	43
Lewiston	0	5	117	213
Utica	0	0	43	43
St Charles	4	10	157	171
Olmsted*	**0**	**2**	**133**	**135**
Dover	0	2	44	46
Eyota	0	0	89	89
Dodge	**13**	**32**	**346**	**391**
Kasson	12	14	104	130
Dodge Center	0	12	163	175
Claremont	0	4	64	68
Steele*	**0**	**2**	**24**	**26**
Meridan	0	2	20	22
Waseca	**1**	**26**	**381**	**408**
Waseca	0	24	259	283
Janesville	0	2	106	108
Smiths Mill	0	0	13	13
Blue Earth*	**1**	**1**	**59**	**61**
Smiths Mill	0	1	4	4
Judson	0	0	25	25
Cambria	0	0	26	26
Brown	**6**	**34**	**925**	**965**
New Ulm	6	6	453	465
Essig	0	0	11	11
Sleepy Eye	0	8	270	278
Cobden	0	0	10	10
Springfield	0	20	156	176

Table 3.2-10
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for 20 MNT

County and Communities	Number of Noise Sensitive Receptors for 11 Trains			
	Wayside	Wayside/horn	Horn	Total
Redwood	**0**	**0**	**162**	**162**
Sanborn	0	0	41	41
Lamberton	0	0	37	37
Revere	0	0	17	17
Walnut Grove	0	0	61	61
Lyon	**0**	**1**	**98**	**99**
Tracy	0	1	36	37
Garvin	0	0	17	17
Balaton	0	0	39	39
Burchard	0	0	2	2
Lincoln	**0**	**1**	**150**	**151**
Tyler	0	0	63	63
Lake Benton	0	1	75	76
Verdi	0	0	7	7

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-11
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for 50 MNT

County and Communities	Number of Noise Sensitive Receptors for 21 Trains			
	Wayside	Wayside/horn	Horn	Total
Winona	**9**	**66**	**549**	**624**
Goodview	0	0	0	0
Minnesota City	0	0	0	0
Stockton	0	8	56	64
Lewiston	0	23	140	163
Utica	0	2	48	50
St Charles	4	31	289	324

Table 3.2-11
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for 50 MNT

County and Communities	Number of Noise Sensitive Receptors for 21 Trains			
	Wayside	Wayside/horn	Horn	Total
Olmsted*	**0**	**6**	**247**	**253**
Dover	0	6	61	67
Eyota	0	0	182	182
Dodge	**15**	**52**	**580**	**647**
Kasson	15	24	167	206
Dodge Center	0	21	275	296
Claremont	0	4	113	117
Steele*	**2**	**4**	**27**	**33**
Meridan	2	4	18	24
Waseca	**2**	**51**	**631**	**684**
Waseca	0	30	422	452
Janesville	1	20	181	202
Smiths Mill	0	1	16	17
Blue Earth*	**2**	**8**	**85**	**95**
Smiths Mill	0	3	3	6
Judson	0	2	40	42
Cambria	0	0	33	33
Brown	**9**	**44**	**1,039**	**1,092**
New Ulm	6	9	518	533
Essig	0	0	20	20
Sleepy Eye	0	12	285	297
Cobden	0	1	11	12
Springfield		21	176	197
Redwood	**2**	**6**	**329**	**337**
Sanborn	0	1	82	83
Lamberton	0	2	81	83
Revere	0	0	30	30
Walnut Grove	2	3	126	131

Table 3.2-11
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for 50 MNT

County and Communities	Number of Noise Sensitive Receptors for 21 Trains			
	Wayside	Wayside/horn	Horn	Total
Lyon	**0**	**4**	**217**	**221**
Tracy	0	4	94	98
Garvin	0	0	31	31
Balaton	0	0	80	80
Burchard	0	0	4	4
Lincoln	**0**	**3**	**274**	**277**
Tyler	0	0	144	144
Lake Benton	0	3	108	111
Verdi	0	0	16	16

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-12
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for 100 MNT

County and Communities	Number of Noise Sensitive Receptors for 37 Trains			
	Wayside	Wayside/horn	Horn	Total
Winona	**8**	**137**	**736**	**881**
Goodview	0	0	0	0
Minnesota City	0	0	0	0
Stockton	0	14	82	96
Lewiston	0	40	245	285
Utica	0	25	34	59
St Charles	4	54	359	417
Olmsted*	**0**	**20**	**249**	**269**
Dover	0	12	85	97
Eyota	0	8	160	168

Table 3.2-12
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for 100 MNT

County and Communities	Number of Noise Sensitive Receptors for 37 Trains			
	Wayside	Wayside/horn	Horn	Total
Dodge	**17**	**108**	**835**	**960**
Kasson	17	43	281	341
Dodge Center	0	40	366	406
Claremont	0	18	165	183
Steele*	**11**	**22**	**36**	**69**
Meridan	9	19	15	43
Waseca	**3**	**82**	**950**	**1,035**
Waseca	0	56	632	688
Janesville	1	23	295	319
Smiths Mill	0	2	16	18
Blue Earth*	**2**	**10**	**94**	**106**
Smiths Mill	0	4	2	6
Judson	0	4	40	44
Cambria	1	2	32	35
Brown	**21**	**144**	**1,642**	**1,807**
New Ulm	15	82	856	953
Essig	0	1	25	26
Sleepy Eye	0	22	419	441
Cobden	0	1	25	26
Springfield	0	34	287	321
Redwood	**2**	**12**	**497**	**511**
Sanborn	0	3	121	124
Lamberton	0	4	116	120
Revere	0	0	44	44
Walnut Grove	2	5	201	208
Lyon	**0**	**9**	**442**	**451**
Tracy	0	5	218	223
Garvin	0	0	72	72
Balaton	0	3	132	135
Burchard	0	0	4	4

Table 3.2-12
Existing Rail Line - Minnesota
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for 100 MNT

County and Communities	Number of Noise Sensitive Receptors for 37 Trains			
	Wayside	Wayside/horn	Horn	Total
Lincoln	**0**	**22**	**400**	**422**
Tyler	0	0	240	240
Lake Benton	0	19	124	143
Verdi	0	2	29	31

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-13
Existing and Projected Train Traffic - Winona*
Number of Noise Sensitive Receptors - 65 dBA L_{dn}

Winona	Wayside	Wayside/Horn	Horn	Total
28 trains per day - existing	8	857	2,889	3,754
34 trains per day - projected (20MNT)	8	981	2,935	3,924
42 trains per day - projected (40MNT)	14	1,204	2,944	4,162
54 trains per day - projected (100MNT)	14	1,296	3,846	5,156

* Includes 28 existing trains per day operated by Canadian Pacific Railway (CP) trains through Winona.

Table 3.2-14
Existing and Projected Train Traffic - Winona*
Number of Noise Sensitive Receptors - 70 dBA L_{dn} for

Winona	Wayside	Wayside/Horn	Horn	Total
28 trains per day - existing	0	355	1,948	2,303
34 trains per day - projected (20MNT)	1	396	2,098	2,495
42 trains per day - projected (40MNT)	2	564	2,131	2,697
54 trains per day - projected (100MNT)	8	749	2,894	3,651

* Includes 28 existing trains per day operated by Canadian Pacific Railway (CP) trains through Winona.

Table 3.2-15
Existing Rail Line - Minnesota
Noise Sensitive Receptors Comparison for Existing and Proposed Conditions at 20 MNT - 65dBA L_{dn}

County and Communities	Existing and 11 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Winona	**15**	**22**	**7**	**72**	**174**	**102**	**819**	**893**	**74**
Goodview	0	4	4	0	9	9	119	127	8
Minnesota City	7	8	1	5	24	19	44	86	42
Stockton	0	1	1	13	12	-1	61	77	16
Lewiston	0	0	0	14	42	28	201	244	43
Utica	0	1	1	13	24	11	35	29	-6
St. Charles	0	0	0	24	60	36	326	329	3
Olmsted*	**0**	**0**	**0**	**5**	**19**	**14**	**320**	**322**	**2**
Dover	0	0	0	5	8	3	75	76	1
Eyota	0	0	0	0	11	11	238	239	1

Table 3.2-15
Existing Rail Line - Minnesota
Noise Sensitive Receptors Comparison for Existing and Proposed Conditions at 20 MNT - 65dBA L_{dn}

County and Communities	Existing and 11 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Dodge	**0**	**20**	**20**	**78**	**83**	**5**	**762**	**764**	**2**
Kasson	0	20	20	39	42	3	238	242	4
Dodge Center	0	0	0	26	28	2	346	350	4
Claremont	0	0	0	8	10	2	152	154	2
Steele*	**1**	**1**	**0**	**6**	**6**	**0**	**35**	**35**	**0**
Meridan	0	0	0	6	6	0	25	25	0
Waseca	**0**	**1**	**1**	**75**	**84**	**-9**	**901**	**911**	10
Waseca	0	1	1	37	57	20	652	653	1
Janesville	0	0	0	21	23	2	214	241	27
Smiths Mill	0	0	0	1	3	2	18	16	-2
Blue Earth*	**2**	**3**	**1**	**5**	**10**	**5**	**92**	**92**	**0**
Smiths Mill	0	0	0	2	2	0	3	3	0
Judson	0	0	0	2	5	3	41	42	1
Cambria	0	0	0	0	1	1	33	33	0
Brown	**4**	**26**	**22**	**41**	**150**	**109**	**1,486**	**1,584**	**98**
New Ulm	0	23	23	11	89	78	811	827	16
Essig	0	0	0	0	1	1	21	25	4
Sleepy Eye	0	0	0	0	22	22	268	396	128
Cobden	0	0	0	1	1	0	15	18	3
Springfield	0	0	0	21	33	12	233	254	21
Redwood	**0**	**2**	**2**	**6**	**10**	**4**	**332**	**453**	**121**
Sanborn	0	0	0	0	2	2	81	125	44
Lamberton	0	0	0	2	3	1	97	109	12
Revere	0	0	0	0	0	0	34	38	4
Walnut Grove	0	2	2	4	5	1	109	169	60

Table 3.2-15
Existing Rail Line - Minnesota
Noise Sensitive Receptors Comparison for Existing and Proposed Conditions at 20 MNT - 65dBA L_{dn}

County and Communities	Existing and 11 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Lyon	**0**	**0**	**0**	**1**	**9**	**8**	**250**	**430**	**220**
Tracy	0	0	0	0	6	6	125	217	92
Garvin	0	0	0	0	0	0	28	55	27
Balaton	0	0	0	1	3	2	86	150	64
Burchard	0	0	0	0	0	0	4	4	0
Lincoln	**0**	**0**	**0**	**7**	**19**	**12**	**256**	**366**	**110**
Tyler	0	0	0	1	0	-1	125	215	90
Lake Benton	0	0	0	6	16	10	99	121	22
Verdi	0	0	0	0	2	2	23	26	3

E= existing P=proposed I=increase
* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-16
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions at 50 MNT - 65dBA L_{dn}

County and Communities	Existing and 21 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Winona	**15**	**48**	**33**	**72**	**259**	**187**	**819**	**1,169**	**350**
Goodview	0	0	0	0	51	51	119	107	-12
Minnesota City	7	32	25	5	20	15	44	96	52
Stockton	0	2	2	13	19	6	61	91	30
Lewiston	0	0	0	14	52	38	201	345	144
Utica	0	1	1	13	31	18	35	37	2
St. Charles	0	0	0	24	81	57	326	478	152

Table 3.2-16
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions at 50 MNT - 65dBA L_{dn}

County and Communities	Existing and 21 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Olmsted*	**0**	**3**	**3**	**5**	**32**	**27**	**320**	**417**	**97**
Dover	0	2	2	5	16	11	75	89	14
Eyota	0	0	0	0	16	16	238	318	80
Dodge	**0**	**30**	**30**	**78**	**171**	**93**	**762**	**1,111**	**349**
Kasson	0	30	30	39	61	22	238	434	196
Dodge Center	0	0	0	26	75	49	346	459	113
Claremont	0	0	0	8	30	22	152	183	31
Steele*	**1**	**5**	**4**	**6**	**15**	**9**	**35**	**37**	**2**
Meridan	0	3	3	6	14	8	25	21	-4
Waseca	**0**	**1**	**1**	**75**	**166**	**91**	**901**	**1,232**	**331**
Waseca	0	0	0	37	122	85	652	859	207
Janesville	0	1	1	21	35	14	214	349	135
Smiths Mill	0	1	1	1	7	6	18	10	-8
Blue Earth*	**2**	**3**	**1**	**5**	**35**	**30**	**92**	**63**	**-29**
Smiths Mill	0	0	0	2	5	3	3	0	-3
Judson	0	0	0	2	12	10	41	33	-8
Cambria	0	0	0	0	12	12	33	21	-12
Brown	**4**	**49**	**45**	**41**	**241**	**200**	**1,486**	**2,142**	**656**
New Ulm	0	35	35	11	103	92	811	1,063	252
Essig	0	0	0	0	2	2	21	27	6
Sleepy Eye	0	4	4	0	59	59	268	574	306
Cobden	0	0	0	1	2	1	15	22	7
Springfield	0	2	2	21	63	42	233	418	185
Redwood	**0**	**3**	**3**	**6**	**51**	**45**	**332**	**626**	**294**
Sanborn	0	0	0	0	8	8	81	162	81
Lamberton	0	0	0	2	14	12	97	179	82
Revere	0	0	0	0	7	7	34	42	8
Walnut Grove	0	2	2	4	22	18	109	223	114

Table 3.2-16
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions at 50 MNT - 65dBA L_{dn}

County and Communities	Existing and 21 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Lyon	**0**	**0**	**0**	**1**	**42**	**41**	**250**	**702**	**452**
Tracy	0	0	0	0	15	15	125	418	293
Garvin	0	0	0	0	6	6	28	81	53
Balaton	0	0	0	1	17	16	86	179	93
Burchard	0	0	0	0	1	1	4	3	-1
Lincoln	**0**	**1**	**1**	**7**	**51**	**44**	**256**	**495**	**239**
Tyler	0	0	0	1	16	15	125	298	173
Lake Benton	0	0	0	6	30	24	99	155	56
Verdi	0	0	0	0	3	3	23	30	13

E= existing P=proposed I=increase
* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-17
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions at 100 MNT - 65dBA L_{dn}

County and Communities	Existing and 37 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Winona	**15**	**79**	**64**	**72**	**444**	**372**	**819**	**1,278**	**459**
Goodview	0	0	0	0	66	66	119	92	-27
Minnesota City	7	52	45	5	32	27	44	114	70
Stockton	0	7	7	13	35	22	61	100	39
Lewiston	0	0	0	14	101	87	201	355	154
Utica	0	1	1	13	41	28	35	23	-12
St. Charles	0	0	0	24	131	107	326	593	267

Table 3.2-17
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions at 100 MNT - 65dBA L_{dn}

County and Communities	Existing and 37 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Olmsted*	**0**	**6**	**6**	**5**	**78**	**73**	**320**	**456**	**136**
Dover	0	4	4	5	25	20	75	89	14
Eyota	0	0	0	0	49	49	238	354	116
Dodge	**0**	**59**	**59**	**78**	**266**	**188**	**762**	**1,369**	**607**
Kasson	0	59	59	39	87	48	238	650	412
Dodge Center	0	0	0	26	120	94	346	469	123
Claremont	0	0	0	8	48	40	152	170	18
Steele*	**1**	**11**	**10**	**6**	**22**	**16**	**35**	**36**	**1**
Meridan	0	9	9	6	19	13	25	15	-10
Waseca	**0**	**2**	**2**	**75**	**410**	**335**	**901**	**1,532**	**631**
Waseca	0	0	0	37	321	284	652	1,050	398
Janesville	0	1	1	21	75	54	214	447	233
Smiths Mill	0	0	0	1	10	9	18	10	-8
Blue Earth*	**2**	**5**	**3**	**5**	**60**	**55**	**92**	**73**	**-19**
Smiths Mill	0	0	0	2	5	3	3	1	-2
Judson	0	0	0	2	23	21	41	32	-9
Cambria	0	0	0	0	20	20	33	15	-18
Brown	**4**	**80**	**76**	**41**	**502**	**461**	**1,486**	**2,813**	**1,327**
New Ulm	0	49	49	11	249	238	811	1,411	600
Essig	0	0	0	0	11	11	21	18	-3
Sleepy Eye	0	14	14	0	111	111	268	685	417
Cobden	0	0	0	1	7	6	15	19	4
Springfield	0	2	2	21	100	79	233	648	415
Redwood	**0**	**4**	**4**	**6**	**136**	**130**	**332**	**702**	**370**
Sanborn	0	0	0	0	32	32	81	141	60
Lamberton	0	0	0	2	37	35	97	252	155
Revere	0	0	0	0	14	14	34	37	3
Walnut Grove	0	0	0	4	52	48	109	248	139

Table 3.2-17
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions at 100 MNT - 65dBA L_{dn}

County and Communities	Existing and 37 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Lyon	**0**	**0**	**0**	**1**	**70**	**69**	**250**	**904**	**654**
Tracy	0	0	0	0	27	27	125	588	463
Garvin	0	0	0	0	10	10	28	78	50
Balaton	0	0	0	1	28	27	86	207	121
Burchard	0	0	0	0	1	1	4	3	-1
Lincoln	**0**	**1**	**1**	**7**	**103**	**96**	**256**	**580**	**324**
Tyler	0	0	0	1	38	37	125	331	206
Lake Benton	0	0	0	6	57	51	99	195	96
Verdi	0	0	0	0	3	3	23	30	7

E= existing P=proposed I=increase
* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-18
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions at 20 MNT - 70 dBA L_{dn}

County and Communities	Existing and 11 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Winona	**6**	**6**	**0**	**11**	**17**	**6**	**315**	**372**	**57**
Goodview	0	0	0	0	0	0	0	0	0
Minnesota City	0	0	0	0	0	0	0	0	0
Stockton	0	0	0	0	2	2	24	41	17
Lewiston	0	0	0	0	5	5	83	117	34
Utica	0	0	0	0	0	0	43	43	0
St. Charles	4	4	0	11	10	-1	150	157	7

Table 3.2-18
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions
at 20 MNT - 70 dBA L_{dn}

County and Communities	Existing and 11 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Olmsted*	**0**	**0**	**0**	**2**	**2**	**0**	**134**	**134**	**0**
Dover	0	0	0	2	2	0	44	44	0
Eyota	0	0	0	0	0	0	89	89	0
Dodge	**12**	**13**	**1**	**31**	**32**	**1**	**341**	**346**	**5**
Kasson	12	12	0	13	14	1	104	104	0
Dodge Center	0	0	0	11	12	1	162	163	1
Claremont	0	0	0	4	4	0	64	64	0
Steele*	**0**	**6**	**6**	**2**	**2**	**0**	**22**	**24**	**2**
Meriden	0	0	0	2	2	0	18	20	2
Waseca	**0**	**1**	**1**	**24**	**26**	**2**	**292**	**381**	**89**
Waseca	0	0	0	24	24	0	200	259	59
Janesville	0	0	0	0	0	0	77	106	29
Smiths Mill	0	0	0	0	0	0	12	13	1
Blue Earth*	**1**	**1**	**0**	**1**	**1**	**0**	**53**	**59**	**6**
Smiths Mill	0	0	0	1	1	0	4	4	0
Judson	0	0	0	0	0	0	24	25	1
Cambria	0	0	0	0	0	0	21	26	5
Brown	**6**	**6**	**0**	**33**	**34**	1	**884**	**925**	**41**
New Ulm	6	6	0	6	6	0	422	453	31
Essig	0	0	0	0	0	0	11	11	0
Sleepy Eye	0	0	0	8	8	0	267	270	3
Cobden	0	0	0	0	0	0	9	10	1
Springfield	0	0	0	19	20	1	150	156	6
Redwood	**0**	**0**	**0**	**0**	**0**	**0**	**132**	**162**	**30**
Sanborn	0	0	0	0	0	0	35	41	6
Lamberton	0	0	0	0	0	0	28	37	9
Revere	0	0	0	0	0	0	17	17	0
Walnut Grove	0	0	0	0	0	0	48	61	13

Table 3.2-18
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions
at 20 MNT - 70 dBA L_{dn}

County and Communities	Existing and 11 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Lyon	**0**	**0**	**0**	**0**	**1**	**1**	**60**	**98**	**38**
Tracy	0	0	0	0	1	1	22	36	14
Garvin	0	0	0	0	0	0	8	17	9
Balaton	0	0	0	0	0	0	25	39	14
Burchard	0	0	0	0	0	0	1	2	1
Lincoln	**0**	**0**	**0**	**0**	**1**	**1**	**101**	**150**	**49**
Tyler	0	0	0	0	0	0	37	63	26
Lake Benton	0	0	0	0	1	1	57	75	18
Verdi	0	0	0	0	0	0	5	7	2

E= existing P=proposed I=increase
* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-19
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions
at 50 MNT - 70 dBA L_{dn}

County and Communities	Existing and 21 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Winona	**6**	**9**	**3**	**11**	**66**	**55**	**315**	**549**	**234**
Goodview	0	0	0	0	0	0	0	0	0
Minnesota City	0	0	0	0	0	0	0	0	0
Stockton	0	0	0	0	8	8	24	56	32
Lewiston	0	0	0	0	23	23	83	140	57
Utica	0	0	0	0	2	2	43	48	5
St. Charles	4	4	0	11	31	20	150	289	139

Table 3.2-19
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions
at 50 MNT - 70 dBA L_{dn}

County and Communities	Existing and 21 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Olmsted*	**0**	**0**	**0**	**2**	**6**	**4**	**134**	**247**	**113**
Dover	0	0	0	2	6	4	44	61	17
Eyota	0	0	0	0	0	0	89	182	93
Dodge	**12**	**15**	**3**	**31**	**52**	**21**	**341**	**580**	**239**
Kasson	12	15	3	13	24	11	104	167	63
Dodge Center	0	0	0	11	21	10	162	275	113
Claremont	0	0	0	4	4	0	64	113	49
Steele*	**0**	**2**	**2**	**2**	**4**	**2**	**22**	**27**	**5**
Meriden	0	2	2	2	4	2	18	18	0
Waseca	**0**	**2**	**2**	**24**	**51**	**27**	**292**	**631**	**339**
Waseca	0	0	0	24	30	6	200	422	222
Janesville	0	1	1	0	20	20	77	181	104
Smiths Mill	0	0	0	0	1	1	12	16	4
Blue Earth*	**1**	**2**	**1**	**1**	**8**	**7**	**53**	**85**	**32**
Smiths Mill	0	0	0	1	3	2	4	3	-1
Judson	0	0	0	0	2	2	24	40	16
Cambria	0	0	0	0	0	0	21	33	12
Brown	**6**	**9**	**3**	**33**	**44**	**11**	**884**	**1,039**	**115**
New Ulm	6	6	0	6	9	3	422	518	96
Essig	0	0	0	0	0	0	11	20	9
Sleepy Eye	0	0	0	8	12	4	267	285	18
Cobden	0	0	0	0	1	1	9	11	2
Springfield	0	0	0	19	21	2	150	176	26
Redwood	**0**	**2**	**2**	**0**	**6**	**6**	**132**	**329**	**197**
Sanborn	0	0	0	0	1	1	35	82	47
Lamberton	0	0	0	0	2	2	28	81	53
Revere	0	0	0	0	0	0	17	30	13
Walnut Grove	0	2	2	0	3	3	48	126	78

Table 3.2-19
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions
at 50 MNT - 70 dBA L_{dn}

County and Communities	Existing and 21 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Lyon	**0**	**0**	**0**	**0**	**4**	**4**	**60**	**217**	**157**
Tracy	0	0	0	0	4	4	22	94	72
Garvin	0	0	0	0	0	0	8	31	23
Balaton	0	0	0	0	0	0	25	80	55
Burchard	0	0	0	0	0	0	1	4	3
Lincoln	**0**	**0**	**0**	**0**	**3**	**3**	**101**	**254**	**153**
Tyler	0	0	0	0	0	0	37	144	107
Lake Benton	0	0	0	0	3	3	57	108	51
Verdi	0	0	0	0	0	0	5	16	11

E= existing P=proposed I=increase
* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Table 3.2-20
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions
at 100 MNT - 70 dBA L_{dn}

County and Communities	Existing and 37 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Winona	**6**	**8**	**2**	**11**	**137**	**126**	**315**	**736**	**421**
Goodview	0	0	0	0	0	0	0	0	0
Minnesota City	0	0	0	0	0	0	0	0	0
Stockton	0	0	0	0	14	14	24	82	58
Lewiston	0	0	0	0	40	40	83	245	162
Utica	0	0	0	0	25	25	43	34	-9
St. Charles	4	4	0	11	54	43	150	359	209

Table 3.2-20
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions
at 100 MNT - 70 dBA L_{dn}

County and Communities	Existing and 37 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Olmsted*	**0**	**0**	**0**	**2**	**20**	**18**	**134**	**249**	**115**
Dover	0	0	0	2	12	10	44	85	41
Eyota	0	0	0	0	8	8	89	160	71
Dodge	**12**	**17**	**5**	**31**	**108**	**77**	**341**	**835**	**494**
Kasson	12	17	5	13	43	30	104	281	177
Dodge Center	0	0	0	11	40	29	162	366	204
Claremont	0	0	0	4	18	14	64	165	101
Steele*	**0**	**6**	**6**	**2**	**6**	**4**	**22**	**34**	**12**
Meriden	0	4	4	2	5	3	18	24	6
Waseca	**0**	**3**	**3**	**24**	**82**	**58**	**292**	**950**	**658**
Waseca	0	0	0	24	56	32	200	632	432
Janesville	0	1	1	0	23	23	77	295	218
Smiths Mill	0	0	0	0	2	2	12	16	4
Blue Earth*	**1**	**2**	**1**	**1**	**10**	**9**	**53**	**94**	**41**
Smiths Mill	0	0	0	1	4	3	4	2	-2
Judson	0	0	0	0	4	4	24	40	16
Cambria	0	1	1	0	2	2	21	32	11
Brown	**6**	**21**	**15**	**33**	**144**	**111**	**884**	**1,642**	**758**
New Ulm	6	15	9	6	82	76	422	856	434
Essig	0	0	0	0	1	1	11	25	14
Sleepy Eye	0	0	0	8	22	14	267	419	152
Cobden	0	0	0	0	1	1	9	25	16
Springfield	0	0	0	19	34	15	150	287	137
Redwood	**0**	**2**	**2**	**0**	**12**	**12**	**132**	**497**	**365**
Sanborn	0	0	0	0	3	3	35	121	86
Lamberton	0	0	0	0	4	4	28	116	88
Revere	0	0	0	0	0	0	17	44	27
Walnut Grove	0	2	2	0	5	5	48	201	153

Table 3.2-20
Existing Rail Line - Minnesota
Noise Sensitive Receptor Comparison for Existing and Proposed Conditions at 100 MNT - 70 dBA L_{dn}

County and Communities	Existing and 37 Trains Per Day								
	Wayside			Wayside/horn			Horn		
	E	P	I	E	P	I	E	P	I
Lyon	**0**	**0**	**0**	**0**	**9**	**9**	**60**	**442**	**382**
Tracy	0	0	0	0	5	5	22	218	196
Garvin	0	0	0	0	0	0	8	72	64
Balaton	0	0	0	0	3	3	25	132	107
Burchard	0	0	0	0	0	0	1	4	3
Lincoln	**0**	**0**	**0**	**0**	**22**	**22**	**101**	**400**	**299**
Tyler	0	0	0	0	0	0	37	240	203
Lake Benton	0	0	0	0	19	19	57	124	67
Verdi	0	0	0	0	2	2	5	29	24

E= existing P=proposed I=increase
* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Noise sensitive receptors, many of which would be located within the small communities along the rail line, would be exposed to average daily noise levels of 65 dBA and 70 dBA under each operating level. The most significant increase in noise impacts would result from the increased sounding of train horns at grade crossings due to more trains passing through the crossings. However, additional noise sensitive receptors would be impacted by both wayside and horn noise. The overall increase in noise sensitive receptors experiencing increased noise levels would result in significant impacts at all levels of operation. Communities that SEA considered would be substantially impacted by increased noise level would be those communities where the entire community is contained within the noise contour. The communities of Judson, Cambria, and Burchard, Minnesota are entirely within the 65 dBA L_{dn} contour and would therefore remain so under all levels of operation. The communities of Smiths Mill at 20 MNT; Utica, Dover, Claremont, Meriden, Essig, Garvin, and Verdi at 50 MNT; and Lewiston, Chester, Dodge Center, Cobden, Sanborn, Revere, and Balaton added at 100 MNT would also be entirely within the 65dBA L_{dn} contour.

SEA recognizes that the majority of noise generated by trains during operation results from horn sounding. Train horn sounding is deliberate, and in many states, required by law to enhance the safety of vehicles at grade crossings of active rail lines. SEA understands that horn noise can create an adverse environmental impact and is an annoyance. However, SEA has refrained from requiring mitigation of horn noise in past cases, indicating that "any attempt to significantly reduce [train horn] noise levels at grade crossings would jeopardize safety, which we consider to be of paramount importance."[7] A study by the Federal Railroad Administration (FRA) evaluating the impacts of whistle-free crossings in Florida on rail safety provides support for SEA's position. In this study, FRA determined vehicle/train accidents increased between 195 and 500 percent at crossings where whistle soundings were banned.[8] The difference in the percentage of accident increase was dependent on considerations such as how many accidents would have occurred even if whistles had been used and what constituted an accident. Additionally, in a joint study between FRA and the Association of American Railroads (AAR), it was determined that crossings with whistle bans averaged 84 percent more collisions than comparable crossings where whistles were sounded.[9]

Recent Federal legislation, specifically the Swift Act (49 USC 20153), directs the Secretary of the Department of Transportation (DOT) to develop regulations relating to noise and rail safety measures. FRA is the Federal agency within DOT with primary responsibility for establishing train horn requirements and alternatives. On January 13, 2000, FRA published a Notice of Proposed Rulemaking in the Federal Register that proposes requirements for locomotive horn sounding at grade crossings and a procedure for the establishment of "quiet zones" for train horns. FRA defines a quiet zone as a "segment of rail line within which is situated one or a number of consecutive highway/rail crossings at which locomotive horns are not routinely sounded." FRA's proposal includes establishing an Application process for communities to obtain FRA approval to establish quiet zones. Approval would require the community to implement supplemental safety measures, such as four-quadrant gates, directional horns, median barriers, temporary road closures, or other measures determined by FRA to be effective at enhancing grade crossing safety. FRA has prepared a Draft EIS as part of its proposed rulemaking. Following completion of the EIS process, FRA will publish the final rule. The final

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[7] Surface Transportation Board, Section of Environmental Analysis. *Union Pacific Railroad-Control-Southern Pacific Railroad,* Decision No. 44, Finance Docket No. 32760, August 12, 1996.

[8] Federal Railroad Administration. 1999. Cited in *Use of Locomotive Horns at Highway-Rail Grade Crossings; Proposed Rule.* Docket No. FRA-1999-6439, Notice No. 1. Issued December 16, 1999. Federal Register, January 13, 2000.

[9] Ibid.

rule will take affect one year after its publication. FRA is continuing the rulemaking process, however, no dates for publication of the final rule have been proposed. SEA believes that FRA's final regulations will provide a safe, effective means to address horn noise concerns.

3.2.9.2 Vibration

For the reasons discussed below, operation of the proposed project would likely result in changes in ground vibration caused by operation of trains over the existing rail line. Replacement of jointed rail and deteriorated ballast may help reduce ground vibration. However, the increased length, weight, and speed of unit coal trains would likely result in increases of both the frequency and severity of ground vibration.

Ground vibration is a concern for several reasons. These include:

- structural damage to buildings and residences
- concern for structural damage
- nuisance or inconvenience
- affects on sensitive equipment

Based on information provided by residents during the scoping meeting, ground vibrations occur along the existing DM&E rail line. The magnitude of existing vibration is a result of the weight, length, and speed of trains currently operating on the existing DM&E rail line and the density, topsoil depth, and particle size of the soils adjacent to specific portions of the rail line. Although soils would not change as a result of this project, the operating weight, length, and speed of trains operating on the existing rail line would increase. This would have the potential to increase the magnitude of ground vibration. The magnitude of ground vibration is highly dependent on specific soil conditions and soils along the rail line are highly variable. The magnitude of vibration following rail line reconstruction and during operation of unit coal trains would be the same at all levels of operation due to the magnitude of vibration being a result of a single train event. Vibration magnitude would not be increased by increased train frequency. SEA conservatively determined that ground vibration could be sufficient to cause structural damage to buildings located within 100 feet of the rail line (Appendix F). Table 3.2-21 provides the number of structures within this distance that could be subject to structural damage from ground vibration. Structural damage may not result in conditions requiring repair or concern over structure stability, such as minor cracks in foundations or plaster walls. Additionally, individuals occupying these structures would experience vibration at levels likely to cause disturbance to daily life and be considered a nuisance. Such disturbances could include rattling of windows, items on tables, walls, and shelves and interruption of sleep, conversation, or listening activities (television, radio). These structures could experience minor damage such as cracking of wall or foundations and breakage of items falling from tables, walls, or shelves due to rattling. Because of their proximity to the existing rail line, many of these structures likely experience these types of vibration from existing rail line operations.

Beyond 100 feet, ground vibration would be expected to lessen to a magnitude that would not result in structural damage. However, SEA determined that for structures between 101 and 200 feet, ground vibration could be of sufficient magnitude to cause concern that structural damage would occur (Table 3.2-21). Structural damage within this range would be unlikely. However, ground vibration may be felt at a level great enough to cause building owners and residents to be concerned that over time damage would occur. These individuals may experience continual concern about potential damage. Their quality of life may be reduced as a result of frequent vibration events and the potential disturbance and inconvenience associated with rattling of windows, walls, pictures, and items on shelves and minor damage that may occur from items breaking from rattling off tables, walls, or shelves.

Ground vibration is anticipated to extend outward from the existing rail line for several hundred feet. Beyond 200 feet, ground vibration may still be above the level of human perception. SEA determined that structures between 201 and 400 feet from the rail line would perceive some level of ground vibration (Table 3.2-21). This vibration would present an inconvenience or annoyance to individuals experiencing it. However, it would not be expected to cause any structural damage or significant reduction in individuals' quality of life. Ground vibration is not expected to be a concern beyond 400 feet.

Ground vibration, even at levels below those perceived by humans, may effect sensitive equipment (Appendix F), such as that found in hospitals[10] and major medical facilities. Such facilities were not identified along the existing rail line. Therefore, no impacts to these types of facilities would be anticipated.

[10] Sensitive equipment located at Mayo Clinic is discussed in Section 3.3.3.7.2.

Table 3.2-21
Existing Rail Line - Minnesota
Structures Potentially Impacted by Vibration

County and Community	0 - 100 Feet	101 - 200 Feet	201 - 400 Feet	Total
Winona	**131**	**336**	**656**	**1123**
Winona	121	217	498	836
Stockton	1	12	18	31
The Arches	0	1	5	6
Lewiston	0	24	39	63
St. Charles	7	55	58	120
Olmsted*	**30**	**175**	**410**	**615**
Dover	0	9	18	27
Eyota	0	0	31	31
Chester	0	4	10	14
Rochester	14	72	168	254
Byron	14	84	149	247
Dodge	**15**	**78**	**182**	**275**
Kasson	3	44	73	120
Dodge Center	9	25	75	109
Claremont	2	6	26	34
Steele*	**27**	**92**	**187**	**306**
Owatonna	26	74	155	255
Meridan	0	9	18	27
Waseca	**7**	**71**	**166**	**244**
Waseca	7	54	113	174
Janesville	0	14	38	52
Smiths Mill	0	2	11	13
Blue Earth*	**17**	**74**	**208**	**299**
Smiths Mill	2	0	2	4
Eagle Lake	2	11	34	47
Mankato	11	44	120	175
Judson	0	7	15	22
Cambria	0	0	22	22

Table 3.2-21
Existing Rail Line - Minnesota
Structures Potentially Impacted by Vibration

County and Community	0 - 100 Feet	101 - 200 Feet	201 - 400 Feet	Total
Brown	**14**	**65**	**341**	**420**
New Ulm	6	16	170	192
Essig	0	0	4	4
Sleepy Eye	0	17	77	94
Cobden	0	2	6	8
Springfield	8	21	57	86
Redwood	**0**	**8**	**97**	**105**
Sanborn	0	0	29	29
Lamberton	0	2	21	23
Revere	0	0	13	13
Walnut Grove	0	5	27	32
Lyon	**0**	**5**	**50**	**55**
Tracy	0	3	19	22
Garvin	0	0	7	7
Balaton	0	2	20	22
Burchard	0	0	1	1
Lincoln	**3**	**10**	**62**	**75**
Tyler	0	1	22	23
Lake Benton	3	7	33	43
Verdi	0	2	1	3

* Noise sensitive receptors in Rochester, Byron, Owatonna and Mankato are discussed in Sections 3.2.20.0 - 3.2.20.3, which presents the potential impacts related to proposed bypasses.

Based on the vibration contour of 100 feet from the rail line, SEA estimated that 244 structures could be damaged due to changes in vibration along the existing DM&E rail line. A significant number of structures would be subjected to nuisance levels of vibrations. Therefore, SEA determined the proposed project could result in significant impacts from increases in vibration.

3.2.10 BIOLOGICAL RESOURCES

Biological resources include vegetation, wildlife, aquatic resources and sensitive, threatened and endangered species. SEA determined that the potential for impacts to vegetation (Section 3.2.10.1), wildlife (Section 3.2.10.2) and aquatic resources (Section 3.2.10.3) would most likely be associated with rebuild activities for the existing rail line. Potential impacts to threatened and endangered species are presented in Section 3.2.10.4.

3.2.10.1 Vegetation

Vegetation communities along the rail line in Minnesota were assessed using existing information and aerial photography. The significance or insignificance of reconstruction activities on vegetation communities was determined by evaluating the types of the vegetation communities present within and adjacent to the existing rail line right-of-way. SEA determined significant impacts would occur if the vegetation lost consisted of native prairie and forest, was of high value to wildlife, or more abundant in the rail line right-of-way than in the surrounding project area.

Construction activities associated with rebuilding the existing rail line would impact the vegetation present within the right-of-way. The DM&E right-of-way varies from 50 to 200 feet. Because reconstruction activities would be confined to the right-of-way, it is conservatively assumed all vegetation in the right-of-way would be cleared or disturbed. Railroad right-of-way often represents an important plant conservation site as it is protected from other land use practices, particularly agriculture. Often it supports significant examples of native prairie or other plant communities and may contain uncommon, threatened, or endangered species. Impacts to these communities would be the most significant impacts to vegetation associated with reconstruction activities. Approximately 34.1 miles of native prairie, which is located within the DM&E right-of-way would be lost during reconstruction. In addition, rail bed sub-grade improvements and other reconstruction activities have the potential to impact native prairie adjacent to the right-of-way in areas where additional right-of-way may be required or reconstruction is necessary outside the existing right-of-way. Reconstruction activity could cause permanent and temporary impacts to native prairie along the right-of-way. Any loss of native prairie would be considered significant, as this plant community is rare in Minnesota due to most of the prairie being converted to agricultural use.

Most of the existing DM&E right-of-way contains cool season, pasture-type grasses. Woodlands and shrublands do occur within the right-of-way, primarily along the right-of-way fence. These areas would likely be cleared during reconstruction to allow for movement of equipment and materials and new fence reconstruction. Following reconstruction, these vegetative communities would be expected to reestablish along the right-of-way fence. However, vegetation control measures would likely prevent shrubs and trees from establishing much inside the right-of-way fence.

Several types of wetland vegetation also occur within the right-of-way. Approximately 187.8 acres of wetlands within the existing right-of-way would be lost due to reconstruction activities. Impacts to wetlands are discussed in more detail in Section 3.2.7.2.

Ground and vegetation disturbance within the existing right-of-way could allow the establishment of noxious weeds. Establishment of weeds within the right-of-way would allow the invasion of noxious weeds into other areas, including native prairie and croplands. Timely revegetation of the right-of-way and Application of appropriate herbicides would help reduce these potential impacts.

In isolated areas, it may be necessary to conduct reconstruction activities outside the existing right-of-way. While no permanent additional right-of-way would be required, disturbance to vegetation found in these areas would likely occur. Woody vegetation such as trees and shrubs would be cleared, and grasses, crops, and prairie would be disturbed. Also, where woodlands are adjacent to the rail line, some trees may need to be trimmed or cut to allow safe operation of reconstruction equipment. Because these areas would not be identified until reconstruction activities begin, the locations and quantity of impact cannot be determined. However, they are anticipated to be minimal and widely scattered.

Following completion of reconstruction, DM&E would reestablish vegetation within the right-of-way in all areas outside the ballast. The ballast would be treated with herbicides as part of normal maintenance to prevent the growth of vegetation which could impede drainage and damage the rail bed. Herbicides to control noxious weed growth would also be used in revegetated areas within the right-of-way adjacent to the ballast. Vegetation controls would be used during operation to help maintain drainage and control noxious weeds and woody vegetation along the rail line.

During operation, vegetation control activities could potentially impact native prairie and other vegetative communities along the right-of-way. Vegetation control would consist of manual and rail-mounted herbicide Application to the rail grade to prevent vegetation in the ballast, subballast and subgrade. Any noxious weeds in the right-of-way would require attention, either by manual removal or Application of herbicides to control and eliminate them. However, herbicide Application could impact adjacent vegetation if not properly conducted. Overall impacts to adjacent vegetation would likely be insignificant due to use of EPA-approved herbicides by licensed applicators only within the rail line right-of-way.

3.2.10.2 Wildlife

Wildlife using habitats in the project area have become habituated to activity associated with the existing rail line. However, additional impacts from rail line reconstruction and increased rail operations are anticipated. These impacts include habitat loss, noise, train-wildlife collisions, increased human presence associated with reconstruction and maintenance activities, and the possibility of contaminants being introduced into the environment.

Some wildlife would be displaced during reconstruction of the existing rail line. During reconstruction, vegetation within the right-of-way would be cleared or disturbed, decreasing available habitat for some wildlife species. However, the loss of habitat would not likely be significant because similar habitat is available within the project area and portions of the right-of-way would be allowed to revegetate. Increased human presence and activity would also likely disturb wildlife. Wildlife occupying adjacent habitat could experience sporadic disturbance caused by noise and human activity during reconstruction, train operation, and maintenance activities.

3.2.10.2.1 Big Game

Deer inhabiting areas adjacent to the existing rail line are likely to be disturbed and displaced during reconstruction. Noise, habitat disturbance from reconstruction activities, and human activities would cause big game to seek undisturbed and more secure areas away from the rail line. These same individuals would likely return to the area once reconstruction and reclamation of disturbed areas has been completed. The overall impact of construction-related displacement on local deer populations would be relatively short-term and limited to the duration of reconstruction and reclamation through a particular area. If the construction season would extend into the winter, a period of higher stress for wildlife, reconstruction could increase the mortality rate of big game in a particular area, particularly if important winter shelter habitat is lost or in close proximity to the reconstruction area. Other reconstruction-related impacts that could occur include increased hunting and poaching pressure from the presence of construction crews, and mortality related to increased vehicle and equipment traffic.

Operational impacts to big game would primarily be mortality to individuals struck by a train. Deer unfamiliar with the train, especially the young, would be most susceptible to being struck and killed by trains. Any mortality would be greatest during the first few years of operation, as animals would not be accustomed to increased train activity and speeds. Over time, big game remaining in habitats along the existing rail line would adapt to more frequent trains and increased speeds and mortality and disturbance would be reduced. Deer and antelope mortality from trains is not expected to result in significant adverse impacts to local big game populations.

3.2.10.2.2 Game Species

Upland Birds

Pheasants and turkeys would be the primary upland game birds potentially impacted by the reconstruction of the existing rail line in Minnesota. During reconstruction, loss of habitat and reconstruction activity within the right-of-way would also cause disturbance and displacement of these species. Individuals using areas adjacent to the right-of-way would also likely move away from reconstruction areas. As both pheasant and turkey are ground nesters, some loss of nests and nesting females within the rail line right-of-way could occur. However, any loss would be unlikely or insignificant due to the limited area within the right-of-way. Increased hunting pressure and poaching may result from the presence of construction workers. Reconstruction along the existing rail line could affect the recent expansion of turkey populations in central Minnesota. However, reconstruction activities would not significantly reduce the number of turkeys or inhibit their continued expansion. At most, it would displace them to other areas of lower quality habitat than is provided within the existing right-of-way.

During operation, impacts to game birds would be primarily from disturbance due to passing trains. Birds using the right-of-way and areas immediately adjacent to it could be disturbed and fly when a train is passing. When birds are nesting, leaving the nest could result in nest failure due to exposure of eggs or chicks to predators or the weather. However, these losses would be minimal as both pheasant and turkey chicks leave the nest shortly after hatching and are capable of hiding. In times of severe winter weather conditions, flushing of birds from cover could result in use of valuable energy reserves and increase exposure, resulting in mortality. These losses would be minimal and only expected during unusually severe weather. In rare instances, birds could flush in the path of the train and be struck and killed. Chicks or younger birds on the track could delay running or flying until too late and be struck. However, any losses would be insignificant to the overall population. Vegetation within the right-of-way would likely provide wildlife habitat and cover which could be beneficial to upland bird species especially in areas where the rail line is adjacent to agricultural land.

Waterfowl

As previously stated in Sections 3.1.4.8 and 3.1.5.3, there are numerous Wildlife Management Areas (WMA) and wetlands adjacent to and in close proximity to the existing rail line. Waterfowl using these areas during reconstruction for nesting or resting would likely be displaced to other areas during the period of reconstruction along those portions of the rail line. Noise and human activity would disturb waterfowl. Loss of wetlands in the right-of-way would reduce waterfowl habitat. Because waterfowl are ground nesters, disturbance during nesting could result in destruction of nests and loss of nesting hens if nests were located within the right-of-way. Disturbance of hens and abandonment of nests, temporarily or permanently, could result in nest failure and loss of eggs or chicks. However, waterfowl chicks leave the nest shortly after hatching and would be capable of leaving reconstruction areas soon after hatching. If suitable habitat was not available nearby, hens and chicks could be at increased risk to predators, farm equipment, or traffic on roadways, hazards they face regardless of where they nest. Any loss would be expected to be insignificant to overall waterfowl numbers and production in the area due to the limited amount of habitat within the right-of-way. Potential spills of materials, such as diesel fuel, lubricating oil, and solvents, could negatively affect waterfowl species by contaminating wetlands. Some increases in hunting pressure and poaching could also result from increased numbers of workers along the right-of-way. However, any impacts would be insignificant to overall waterfowl numbers.

During operation, impacts to wildlife would be primarily due to disturbance from passing trains. Individuals close to the rail line would be displaced to more remote areas. Suitable nesting habitat within the right-of-way would likely be unused as frequent rail operations would cause hens to nest elsewhere. This would reduce the likelihood of mortality to chicks from passing trains. In rare instances, birds could be struck by passing trains. However, these impacts would be insignificant to overall waterfowl populations in the project area.

Small Game and Furbearers

Reconstruction noise, human activity and loss of habitat would displace small game and furbearer species from along and within the right-of-way of the rail line. Additionally, increased human activity during the reconstruction phase could result in increased trapping, poaching, and mortality on area roads. However, once reconstruction is completed and the right-of-way has been revegetated, these species are anticipated to return. Some mortality would likely occur from individuals being struck by passing trains. Most of these species have high reproductive potential and any losses during either reconstruction or operation would not significantly impact overall populations or distribution of these species.

3.2.10.2.3 Non-Game Species

Amphibians and Reptiles

Because they are relatively immobile, amphibian and reptile species found within the reconstruction portions of the right-of-way would likely be killed by reconstruction activities. Individuals avoiding death would be displaced due to reconstruction activities and loss of habitat. Potential spills of contaminants (diesel fuel, lubricating oil, etc.) associated with reconstruction could negatively affect these species. However, it is anticipated that reptiles and amphibians would return once reconstruction is completed and the right-of-way becomes revegetated. With the increase in vehicular traffic, some mortality from passing trains or individuals becoming trapped between rails is expected. However, overall impacts to amphibians and reptiles would be insignificant.

Songbirds

Short-term impacts to songbirds include temporary displacement and possible loss of edge habitat along right-of-way fence lines. Some loss of nests could occur in both tree and ground nesting species. Noise during reconstruction is expected to temporarily disturb songbirds, causing them to avoid the right-of-way and use other areas. However, operation and maintenance of the rail line is not expected to have much of an affect on songbirds as many species have adapted to human activity and human disturbances, such as roadways and rail lines. Revegetation of the right-of-way could provide nesting and cover habitat for a variety of species, often of higher quality than adjacent agricultural areas.

Shorebirds

Shorebirds use WMA and wetlands in the project area, and areas along rivers and streams crossed by the existing rail line. Impacts to shorebirds would be similar to those discussed previously for waterfowl.

Small Mammals

Impacts to small mammals, primarily rodents and insectivores (excluding bats), would primarily occur during rebuild of the existing rail line. Small mammals would likely be killed or displaced during the reconstruction phase of the project. Reduced habitat within the right-of-way would also reduce small mammal populations. Increased mortality could also occur due to increased road traffic. Once the right-of-way has been revegetated, small mammals would quickly move back in and repopulate the right-of-way. During operation, impacts to small mammals would primarily result from mortality from passing trains and individuals becoming trapped between the rails. However, losses would be minimal and insignificant.

Raptors

Several raptor species nest, hunt, or winter on or near the project area and could be temporarily displaced during reconstruction of the rail line. Most raptors are intolerant of human activity during the breeding and nesting seasons, which could result in a decline in raptor nesting along the existing rail line right-of-way. Individuals would seek suitable nesting habitat elsewhere. Should reconstruction be initiated following nesting, nest failure could result. Many other raptor species do not nest in the area, but likely hunt in the general vicinity of the existing rail line. Some hunting and roosting habitat would likely be removed and some prey species could be lost or displaced. Use of the right-of-way by raptors during reconstruction would be expected to decline. Following reconstruction and revegetation, prey species would be expected to return, and raptors would again use the area. However, nesting near the right-of-way may not resume as a result of the increase in rail traffic. It is possible that some raptors would adapt to the disturbance from passing trains and nest in suitable habitat adjacent to the rail line. Other impacts during operation could include mortality from increased train traffic and speeds, particularly to low flying species such as owls. However, mortality is anticipated to be minimal and insignificant to overall raptor populations in the area.

3.2.10.3 Aquatics and Fisheries

The existing DM&E right-of-way in Minnesota crosses several rivers, streams, and lakes that provide habitat for a variety of fish and mussel species. Impacts to fish and mussels were determined based on whether reconstruction activities would cause significant changes in water quality, thus affecting fish and mussel populations in the vicinity of the reconstruction activities. In addition, the existing rail line crosses Garvin Creek, a State designated trout stream, in Winona County, eight times. The existing rail line is in proximity to two other trout streams in Winona County, and one in Olmsted County. These trout streams are high quality waters which are classified by the State of Minnesota based on the quality of the habitat they provide. Increased sedimentation could reduce trout forage by increasing siltation on the gravel substrates. Changes in water quality and increased TSS due to reconstruction activities could reduce trout numbers and available habitat. In addition, once the rail line is in operation, potential releases of petroleum products and right-of-way herbicide use could affect aquatic organisms. Any impacts to these trout streams would be considered significant.

The impacts to fish and mussels during reconstruction would occur primarily as a result of increases in TSS. Increased sedimentation may affect fish populations by:

- preventing successful development of fish eggs and larvae
- modifying natural movements and migrations
- reducing the abundance of food (ie. macroinvertebrates)
- clogging and abrading of gills
- altering available habitat

If waterway crossing activities take place near a fish spawning site during or immediately after spawning, and precautions are not taken, there could be impacts to eggs and fry of species present. In addition, increases in sediment loads could cause fish to migrate out of sections of the rivers and streams temporarily. Certain sensitive fish species could suffer gill irritation due to increases in sediment loads if TSS occurs during reconstruction.

Mussels are indicative of overall water quality. Changes in water quality could affect mussel communities located within area waterways. Mussels could be significantly affected during reconstruction if increased TSS results in sedimentation of their beds. Mussel populations have declined in project area waterways due to sedimentation increases. Any increases in sediment would likely contribute to the continued decline of mussel populations.

Spills of oils, lubricants, fuel, etc., during reconstruction could affect fish and mussel populations by:

- acute toxicity to aquatic life
- bioaccumulation of petroleum in fish

The sensitivity of fish to oil decreases with time of exposure, as fish are able to synthesize enzymes needed to metabolize and excrete the toxic compounds. In addition, small fish are more sensitive to oil and oil products than large fish. However, any spills would likely result in some mortality to fish and mussels along the affected stretches of waterways.

The impacts to fish and mussels from rail line operations would occur primarily from fuel and chemical spills, and herbicide Applications to the right-of-way. Petroleum products released into the water affect fish populations as noted above. The impact of a fuel or chemical spill on fish would depend on the type and quantity of the chemical spilled, dispersion in the river or lake, type and quantity of fish present in the spill area, and the cleanup procedures employed. The primary commodity carried by DM&E trains would be coal, which is relatively inert and non-toxic, although it would likely contribute to TSS levels. The only fuel or chemicals that would be carried are those that are needed for the operation of the train. Small fish and aquatic vertebrates would be most sensitive to any chemical spills.

The impacts from the use of herbicides to maintain the right-of-way would be dependent on the type of herbicide used, the Application procedure, the weather at the time of Application, and the proximity of the right-of-way to the river. Impacts of herbicide use can be minimized by the strict adherence to the label instructions and by using herbicides labeled as being non-toxic to aquatic organisms.

3.2.10.4 Endangered, Threatened, and Sensitive Species

Potential impacts to Federally listed endangered or threatened species, species proposed for listing, candidate species, and species with special status recognized by the USFWS could include:

- The death of individuals of the species.
- Reduced recruitment and/or survival of individuals, slowing the species' recovery or expansion of current populations.
- Loss of Federally designated critical habitats.
- Loss of known habitat
- Contribute to other causes of species decline resulting in an unlisted species, particularly a candidate or species of concern, warranting consideration for or being proposed for listing as Federally threatened or endangered.

Impacts on Federally listed species were considered and evaluated if the species potentially occurs in the vicinity of any proposed alternative. The species would be considered potentially impacted by the project if any alternative could result in:

- Direct mortality of individuals.
- Long-term or permanent loss or alteration of existing or potential habitat necessary for the life history functions (breeding, wintering, or migration) of one or more threatened or endangered species.

Nine species listed as Federally endangered, threatened, or sensitive were identified by the U.S. Fish and Wildlife Service (USFWS) in Minnesota for consideration regarding the potential impacts of this project. These species include the Topeka shiner, Minnesota dwarf trout lily, Higgin's eye pearly mussel, winged mapleleaf mussel, Karner blue butterfly, prairie bush-clover, Leedy's roseroot, western prairie fringed orchid, and bald eagle. Potential project impacts to each of these species are discussed below.

3.2.10.4.1 Topeka Shiner

The existing rail line crosses two streams (Flandreau and Spring creeks in Lincoln County) known to contain or potentially contain Topeka shiners. Topeka shiners using existing rail line crossings or downstream areas could be adversely affected if petroleum products were accidentally discharged into aquatic environments. Diesel fuels and lubricating oils are some of the products likely to be present during railroad reconstruction and operation. Any spill would have the potential to significantly harm populations of this species, if found in the stream where a spill occurs. Short-term impacts could occur during reconstruction from increased sedimentation due to runoff from cut-and-fill and other reconstruction sites near waterways. These impacts would be limited to the period of reconstruction, but could affect downstream populations of Topeka shiners.

During operation, downstream impacts could occur if there were derailments and accidental releases of diesel fuels or other contaminants. Impacts would be most likely if potential discharge sites are within 500 feet of surface waters where there may be insufficient riparian vegetation to prevent flows from entering drainages. However, impacts from derailment related spills are unlikely as the improved safety of the rail line would make derailments unlikely.

3.2.10.4.2 Minnesota Dwarf Trout Lily

Minnesota dwarf trout lily occurs in woodland habitats adjoining floodplains in Steele, Rice, and Goodhue counties in Minnesota. Reconstruction would occur in Steele County. However, the area of proposed reconstruction is approximately 15 miles south of Faribault, Minnesota where the lily is found. The Minnesota Natural History Database (MNHDB) has no record of the lily occurring in the proposed project area; therefore, no impacts to the Minnesota dwarf trout lily are anticipated as a result of any part of this project.

3.2.10.4.3 Higgin's Eye Pearly Mussel

The MNHDB has no record of Higgin's eye pearly mussel occurring in the proposed project area. However, since surveys have not been conducted in many of the waterways in the project area, the Higgin's eye pearly mussel may be present.

Potential Higgin's eye pearly mussel populations downstream of reconstruction locations, particularly sites of bridges or culvert replacement, would be susceptible to increased TSS. Individuals or entire beds could be lost from reduction in food, damage to gills, or being silted over with sediment. If Higgin's eye pearly mussels occur in areas of in-stream work, loss of individuals would be expected from reconstruction equipment and activities within the stream. Accidental release of petroleum products would also adversely affect the species but, until they are documented inhabiting areas that would be potentially affected by the proposed project, there is no reason to anticipate that the species would be impacted by the proposed reconstruction.

3.2.10.4.4 Winged Mapleleaf Mussel

No impacts to the winged mapleleaf mussel are anticipated as a result of any part of this project since the only population of this species occurs below the St.Croix Falls dam on the St. Croix River, Wisconsin, 125 miles upstream from Winona, Minnesota.

3.2.10.4.5 Karner Blue Butterfly

No impacts to the Karner blue butterfly are anticipated as a result of any part of this project as no records document the current existence of wild lupine along the existing DM&E rail line. DM&E's existing rail line in Minnesota was surveyed by the Minnesota County Biological Survey (MCBS) in 1998. Wild lupine was not found at that time. Although a Karner blue butterfly population does exist in Winona County at the Whitewater Wildlife Management Area, it is approximately three miles northeast of the proposed project area and would be unaffected by the proposed project.

3.2.10.4.6 Prairie Bush-Clover

A 1998 inventory conducted by the MCBS did not record the presence of this species along DM&E's existing right-of-way. However, the plant has been recorded within one mile of the proposed project area in Brown and Dodge counties (MNHDB 1998). Direct impacts to this species would most likely occur during reconstruction if machinery and surface disturbances destroy local populations, but only if the plant is present within the rail line right-of-way. Additionally, the plant could be impacted by the introduction of noxious weeds or exotics resulting from revegetation, borrow material, and/or railroad ties.

3.2.10.4.7 Leedy's Roseroot

This plant is restricted to limestone cliffs that lead to underground caves. There is no documentation of the plant occurring in the proposed project area. Therefore, no impacts to the plant or its habitat are anticipated.

3.2.10.4.8 Western Prairie Fringed Orchid

The area of potential impact to the western prairie fringed orchid from the proposed project would be where suitable habitat for the orchid coincides with reconstruction areas. Reconstruction activities could have a direct impact on the orchid if it was found to occur within the existing rail line right-of-way. These impacts would include damage to or loss of individuals or their habitat due to surface disturbances caused by reconstruction machinery and introduction of noxious weeds or exotics resulting from revegetation, borrow material, and/or railroad ties. However, the species has not been recorded within the existing DM&E right-of-way. Therefore no impacts to the plant or its habitat are anticipated.

3.2.10.4.9 Bald Eagle

Nesting and wintering habitats are both critical to the continued survival of the bald eagle. Based on increasing population trends, neither eagle nesting nor wintering habitats appear to be in limited supply. There are no indications that current availability of these habitats will limit the bald eagle population in the near future (Federal Register 1999). Potential impacts to wintering bald eagles would result from human activity associated with project reconstruction, operation, or maintenance. Noise from any blasting and the operation of heavy earthmoving equipment and other activities associated with reconstruction and preparation of the rail bed could disturb bald eagles and cause them to use other areas. However, little if any wintering habitat for bald eagles occurs along the existing rail line. Similarly, nesting bald eagles are also highly susceptible to disturbance, which can result in nest abandonment. As with wintering habitat, nesting habitat is not available within the existing rail right-of-way and none is anticipated to be lost as a result of reconstruction. Only minimal impacts related to incidental disturbance are expected to bald eagles as a result of reconstruction.

Mortality resulting from bald eagles being struck by trains while they are feeding on carrion along the rail line could occur. Human activity during maintenance activities could also disturb roosting and feeding bald eagles. However, these are expected to be unusual due to limited use of right-of-way and adjacent areas by bald eagles and the minimal suitable habitat provided for eagles by the rail line right-of-way.

3.2.11 TRANSPORTATION

Section 3.1.9 and Table 3.1-11 give a detailed description of the transportation facilities in the project area. Reconstruction activities would cause a variety of temporary impacts to the existing transportation systems, including Federal, state, county, and private roads. These impacts would include increased traffic and congestion on roadways due to the transportation of materials and crews to work sites. Transportation of materials in heavy trucks and movement of reconstruction equipment could accelerate wear and tear on local roadways. Rural roadways and bridges incapable of supporting reconstruction traffic would require upgrading for safe transportation. Existing road crossings, both grade and grade separated, may require closure and associated detours during reconstruction of the rail line at the crossing. These closures would reroute normal traffic patterns, potentially increasing traffic and congestion in residential areas and on roadways not adequate to handle the increased number of vehicles. Additionally, routes for emergency vehicle response would have to be redesigned to avoid closed crossing and maintain a timely response. Pedestrian traffic would be affected at crossings where sidewalks and other pedestrian ways are provided. Any pedestrian routes would also need to be modified to avoid closed crossings, potentially resulting in pedestrians walking significant distances out of their way or crossing the rail line at unauthorized locations.

Reconstruction activities could also impact rail traffic, both on the existing DM&E system and the systems of other rail carriers. DM&E has indicated that reconstruction would occur in such a manner as to maintain rail service along the rail line. Some delays to trains may occur, but no significant impacts are anticipated. Additionally, reconstruction of the DM&E rail line could impact rail operations of other rail carriers due to delays in traffic to be interchanged and reconstruction of rail crossings. Should DM&E experience train delays due to reconstruction, interchanging rail carriers could also experience delays due to crews waiting for trains and rail schedules being affected. While some impacts would likely occur, they should not significantly impact the overall operations, local, regional, or nationwide, of interchanging rail carriers. During reconstruction by DM&E of existing crossings of other rail carriers, trains using those crossings may be delayed or need to be rerouted to avoid the crossing. Coordination between the railroads would be imperative to maintain safe rail operations and allow reconstruction activities to occur in a manner least disruptive to either railroad. Again, some impacts are expected, although they are not expected to be significant particularly since reconstruction of rail crossings could likely be accomplished during low-levels of rail operations on the intersected rail line.

To analyze the effects of the increased traffic on delays at existing highway/rail crossings, SEA identified crossings along the DM&E system in where the average daily traffic (ADT) would exceed 5,000 vehicles. Anything less than 5,000 was considered by SEA to have relatively few drivers who would experience the potential effect of increased train traffic and the associated additional vehicle delay would be minimal. SEA then calculated potential changes in vehicle delay at these crossings.

In order to analyze the effects of the proposed reconstruction on the roadway system at existing public highway/rail grade crossings, SEA analyzed the crossings for three proposed levels of operation; 20 MNT, 50 MNT and 100 MNT for train lengths of both 6,400 feet (115 rail cars) and 7,400 feet (135 rail cars). SEA calculated potential changes in vehicle delay at these crossings where ADT volumes are 5,000 or greater. SEA categorized crossings based on the level of service. Levels of service ranged from free-flowing to severely congested and were quantified as shown in Table 3.2-22

Table 3.2-22 Grade Crossing Levels of Service	
Level of Service	**Average Total Delay (sec/vehicle)**
A	≤5
B	>5 and ≤10
C	>10 and ≤20
D	>20 and ≤30
E	>30 and ≤45
F	>45

As part of the transportation analysis, SEA determined the time each crossing would be blocked per train crossing event. This time included the time for the train to pass along with time for warning structures to be deployed and restored after the train passed. Because train passing time is dependent on train speed and trains would generally be operating at speeds ranging from 45 to 49 miles per hour, SEA conservatively used 45 miles per hour for all calculations concerning vehicle delay. Blocked crossing time per train was calculated to be 2.1 minutes for 115-car trains and 2.4 minutes for 135-car trains.

SEA determined significant impacts to traffic from the project would result from either an average 30-second increase in vehicle delay, level of service rated E or F (regardless of the existing condition), or a reduction of existing level of service of C or better to a level of service of D or worse due to the project. The detailed description of levels of service and criteria of significance are included in Appendix G, "Traffic and Transportation."

Six counties in Minnesota have public highway/rail grade crossings for which SEA performed vehicle delay calculations (Appendix G). The following provides a summary of these results.

Olmsted County

Seven crossings analyzed in Olmsted County would experience reductions in delay per stopped vehicle. All of these crossings are located along the existing rail line within the area evaluated as part of the Rochester bypass route. These impacts are discussed in Section 3.3.2.10.

Dodge County

20 MNT 6,400 & 7,400 Feet

The crossing of US Hwy 14 (FRA ID No. 196630L, MP 65.20), analyzed in Dodge County, would experience a reduction in delay per stopped vehicle. The level of service following reconstruction would be A for both the 6,400 feet and 7,400 feet train scenario. The crossing would experience a reduction in maximum vehicle queue length under both scenarios.

50 MNT 6,400 & 7,400 Feet

The crossing of US Hwy 14 (FRA ID No. 196630L, MP 65.20), analyzed in Dodge County, would experience a reduction in delay per stopped vehicle. The levels of service following reconstruction would be A for the 6,400 feet train scenario and B for the 7,400 feet scenario. The crossing would experience a reduction in maximum vehicle queue length under both scenarios.

100 MNT 6,400 & 7,400 Feet

The crossing of US Hwy 14 (FRA ID No. 196630L, MP 65.20), analyzed in Dodge County, would experience a reduction in delay per stopped vehicle. The levels of service following reconstruction would be B for the 6,400 feet train scenario and C for the 7,400 feet scenario. The crossing would experience a reduction in maximum vehicle queue length.

Steele County

20 MNT 6,400 & 7,400 Feet

The crossings of Cedar Avenue (FRA ID No.196684T, MP 88.4) and State Avenue (FRA ID No.193388V, MP 88.9), analyzed in Steele County, would both experience reductions in delay per stopped vehicle. The levels of service following reconstruction would be A for both train length scenarios. Both crossings would experience a reduction in maximum vehicle queue length.

50 MNT 6,400 & 7,400 Feet

The crossings of Cedar Avenue (FRA ID No.196684T, MP 88.4) and State Avenue (FRA ID No.193388V, MP 88.9), analyzed in Steele County, would both experience reductions in delay per stopped vehicle. The levels of service following reconstruction would be A for the 6,400 feet train scenario and B for the 7,400 feet scenario. Both crossings would experience a reduction in maximum vehicle queue length.

<u>100 MNT 6,400 & 7,400 Feet</u>

The crossings of Cedar Avenue (FRA ID No. 196684T, MP 88.4) and State Avenue (FRA ID No. 193388V, MP 88.9), analyzed in Steele County, would experience reductions in delay per stopped vehicle. The levels of service following reconstruction would be B for the 6,400 feet train scenario and C for the 7,400 feet scenario. Both crossings would experience a reduction in maximum vehicle queue length.

Waseca County

<u>20 MNT 6,400 & 7,400 Feet</u>

The crossing of State Street (FRA ID No. 193406R, MP 102.5), analyzed in Waseca County, would experience a reduction in delay per stopped vehicle. The level of service following reconstruction would be A for both train length scenarios. The crossing would experience a reduction in maximum vehicle queue length.

<u>50 MNT 6,400 & 7,400 Feet</u>

The crossing of State Street (FRA ID No. 193406R, MP 102.5), analyzed in Waseca County, would experience a reduction in delay per stopped vehicle. The levels of service following reconstruction would be A for the 6,400 feet train scenario and B for the 7,400 feet scenario. The crossing would experience a reduction in maximum vehicle queue length.

<u>100 MNT 6,400 & 7,400 Feet</u>

The crossing of State Street (FRA ID No. 193406R, MP 102.5), analyzed in Waseca County, would experience a reduction in delay per stopped vehicle. The levels of service following reconstruction would be B for the 6,400 feet train scenario and C for the 7,400 feet scenario. The crossing would experience a reduction in maximum vehicle queue length.

Blue Earth County

20 MNT 6,400 & 7,400 Feet

The crossing of 3rd Avenue (UP FRA ID No. 193459P), analyzed in Blue Earth County, would experience a reduction in delay per stopped vehicle. The level of service following reconstruction would be A for both train length scenarios. The crossing would experience a reduction in maximum vehicle queue length.

50 MNT 6,400 & 7,400 Feet

The crossing of 3rd Avenue (UP FRA ID No. 193459P), analyzed in Blue Earth County, would experience a reduction in delay per stopped vehicle. The levels of service following reconstruction would be A for the 6,400 feet train scenario and B for the 7,400 feet scenario. The crossing would experience a reduction in maximum vehicle queue length.

100 MNT 6,400 & 7,400 Feet

The crossing of 3rd Avenue (UP FRA ID No. 193459P), analyzed in Blue Earth County, would experience a reduction in delay per stopped vehicle. The levels of service following reconstruction would be B for the 6,400 feet train scenario and C for the 7,400 feet scenario. The crossing would experience a reduction in maximum vehicle queue length.

Brown County

20 MNT 6,400 & 7,400 Feet

The crossing of 20th Street South (FRA ID No. 193488A, MP 163.80), analyzed in Brown County, would experience a reduction in delay per stopped vehicle. The level of service following reconstruction would be A for both train length scenarios. The crossing would experience a reduction in maximum vehicle queue length.

50 MNT 6,400 & 7,400 Feet

The crossing of 20th Street South (FRA ID No. 193488A, MP 163.80), analyzed in Brown County, would experience a reduction in delay per stopped vehicle. The levels of service following reconstruction would be A for the 6,400 feet train scenario and B for the 7,400 feet scenario. The crossing will experience a reduction in maximum vehicle queue length.

100 MNT 6,400 & 7,400 Feet

The crossing of 20th Street South (FRA ID No. 193488A, MP 163.80), analyzed in Brown County, would experience a reduction in delay per stopped vehicle. The levels of service following reconstruction would be B for the 6,400 feet train scenario and C for the 7,400 feet scenario. The crossing would experience a reduction in maximum vehicle queue length.

Overall, vehicle delay time at grade crossings throughout Minnesota would be reduced for each train passing event due to increased train speeds. However, the increased number of trains would increase the frequency that each crossing would be blocked. This could potentially result in more vehicles delayed per day, however for shorter time periods. Level of service analysis considers potential traffic during high volume periods, such as rush hour. Because the level of service would not be reduced to levels considered significant by SEA, the proposed project would not have a significant impact on traffic. However, minor impacts and inconvenience could occur to numerous motorists.

Rail transportation should be positively impacted by the proposed project. Increased train speed would increase the efficiency of rail movements and transport of goods. Reduced cycle times would provide increased train trips for transport of materials, particularly grain, during high production periods (harvest). Rail safety should also be improved, resulting in safer, more reliable transportation. Some delays may occur due to grade crossings of other railroads. However, few of these exist on the existing system in Minnesota. Coordination between the railroads would be essential to avoid delays from traffic on one system waiting for the traffic on the other system to clear the crossing and for safe utilization of the crossing by both railroads.

Emergency Vehicle Response

In many communities along the existing DM&E rail line police, fire, and emergency medical services or ambulances may be required to cross the rail line at grade crossings when responding to emergencies. The potential exists for emergency vehicles to be delayed at grade crossing blocked by a passing train. SEA analyzed the potential for emergency vehicle delay at grade crossings by looking at the nature of emergency responses, the nature of the train schedules, the crossing delay per stopped vehicle, and the total daily crossing blockage time.

Emergency incidents are random and unpredictable. Where, when, and what the emergency is cannot be predicted. The incident could be a fire on the west of town, a car accident in the midtown area or a burglary in a rural area. Each emergency incident requires different services to respond. A car accident may require police, fire and ambulance, whereas a burglary would only require police response. A timely emergency response may only be necessary in one direction. During a fire or police emergency, delay would only be a factor for travel to the emergency. Equipment delayed returning from the incident would have little, if any impact on safety as the emergency would be over. An exception could be that fire equipment would be minimally delayed returning to the station to restore equipment potentially reducing their ability to respond to a second emergency if it occurred shortly after the first.

Additionally, not all emergency responses are actually emergencies. Of medical emergencies, only approximately 5 to 10 percent (Los Angeles County-wide Coordinating Council on Emergency Medical Services 1975) to 25 percent (Transportation Research Board, 1987) are actually life-threatening. Life threatening medical emergencies are reduced to as little as one percent following on site medical treatment. Only these remaining emergencies would be susceptible to delay in two directions, traveling to the emergency and then to the hospital. Because emergency medical vehicles may be based at fire stations or other non-hospital locations, or may be dispatched while away from the hospital, emergency vehicles responding to an incident could utilize different routes when responding than when transporting a patient to a hospital. Likewise, an emergency vehicle could be directed to use a less direct route to an incident, with better road conditions, in favor of a more direct route with poor road conditions or heavy traffic, depending on the emergency. Therefore, the emergency vehicle may only cross the rail line once during an emergency response.

Determining the consequences of delays to emergency vehicles is further complicated by the time sensitivity of emergency patients to treatment. A study reported by the National Research Council, Transportation Research Board (TRB) reported that only 0.11 percent of emergency patients require prompt emergency room treatment. In this study, "prompt" was defined as on-site treatment within 15 minutes of symptoms or injury and emergency room treatment within 70 minutes. The study also determined that patients in life threatening emergencies would become critical if some treatment was not administered within 30 minutes. The TRB went on to recognize the importance of the patients condition and elapsed time prior to treatment. In recognizing the importance of elapsed time, the TRB pointed out that the closer a patient is to emergency treatment, the less consequential any delay would be to this condition. They indicated "a 5 minute delay at a crossing would not affect patient outcome if the patient is located less than 10 minutes from the ambulance station. On the other hand, if the patient were located almost 15 minutes from the station, a delay of only 1 minute could be critical." TRB did not indicate the consequences of delay to critical patients requiring transport to a hospital. However, it appears that delay is most critical to medical emergencies for travel to the emergency and that the consequences of delay are greater as actual travel time to the emergency increases.

Further complicating the analysis is that not only are emergency events random, but so are train passings. Freight train schedules are dependent on shippers needs for transportation. Therefore they may not occur on regular schedules; at consistent times of the day, week, or month. For this project, coal trains would be subject to availability at the mine for loading, time for crew changes, fueling, inspections, and access to a particular stretch of rail line. All these make it difficult to predict passing freight train events. The randomness of train events complicates emergency vehicle response. When an emergency call is received the dispatcher does not know whether to expect a train or not. Thus they are unable to identify a route to avoid a passing train unless a grade separation is available and provides the most appropriate route to the emergency. In following the identified route for response, the emergency vehicle may:

- not encounter a train and pass undelayed through the crossing.

- arrive at a crossing just as the train arrives and be required to wait the entire time that the train is passing or detour to another unblocked crossing. Should the emergency vehicle chose to wait, it would likely experience reduced traffic on the other side of the crossing as traffic would have cleared while the train was passing. Selecting a detour may result in the emergency vehicle experiencing delay along the entire route due to negotiating traffic.

- arrive during the train crossing. Under this circumstance, the emergency vehicle could utilize the oncoming traffic lane to approach the crossing, avoiding any vehicle queue. After the crossing cleared, it could proceed through the crossing ahead of queued vehicles into the appropriate lane of traffic which would have cleared during the passing train.

- arrive shortly after the train has passed, but before traffic flow had been restored to normal. Under this scenario, the emergency vehicle would likely be required to slow, and make its way through traffic.

Based on these scenarios, and minimum train speeds of 40 mph (only applies to crossings with speed restrictions, other crossing would have train speeds of 45 to 49 mph), the most an emergency vehicle would be expected to be delayed would be 2.6 minutes (Table 3.2-23). This represents the crossing delay per stopped vehicle at 40 mph. The crossing delay per stopped vehicle, or total blocked time per train is the longest amount of time a driver would have to wait at a grade crossing to let a train pass. The amount of time a crossing is blocked is based on the length of the train and the speed of travel. The faster a train is moving, the less time the crossing would be blocked (Table 3.2-23). The shorter the train, the less time the crossing is blocked. All existing DM&E grade crossings in Minnesota at all operational levels, would experience a decrease in delay per train event from the existing conditions. Delay would range from none, to that similar to negotiating a stop light at a busy intersection to the maximum of 2.6 minutes.

Table 3.2-23 Grade Crossing Delays in Minutes at Various Train Velocities and Train Lengths		
Train Velocity: mph / feet per minute	**115 car Train**	**135 car Train**
	minutes of delay	**minutes of delay**
5 / 440	15.0	17.3
10 / 880	7.8	8.9
15 / 1320	5.3	6.1
20 / 1760	4.1	4.7
25 / 2200	3.4	3.9
30 / 2640	2.9	3.1
35 / 3080	2.6	2.9
40 / 3520	2.3	2.6
45 / 3960	2.1	2.4
49 / 4312 (Max. Speed)	2.0	2.2

Total daily crossing blockage time could be used as an indicator of the risk of delay at a grade crossing. It influences the likelihood that a crossing would be blocked when an emergency vehicle would need to cross the tracks. This measurement is obtained by multiplying the crossing delay per stopped vehicle by the number of trains per day, giving the total minutes the crossing would be blocked each day (Table 3.2-24).

Table 3.2-24 Total Time Per Day Crossings are Blocked at Various Velocities, under Various Operation Levels						
Train Velocity: mph / feet per minute	Train length: 115 cars			Train length: 135 cars		
	Total minutes delay with 11 trains per day	Total minutes delay with 21 trains per day	Total minutes delay with 37 trains per day	Total minutes delay with 11 trains per day	Total minutes delay with 21 trains per day	Total minutes delay with 37 trains per day
20 / 1,760	45.1	86.1	151.7	51.7	98.7	173.9
25 / 2,200	37.4	71.4	125.8	42.9	81.9	144.3
30 / 2,640	31.9	60.9	107.3	34.1	65.1	114.7
35 / 3,080	28.6	54.6	96.2	31.9	60.9	107.3
40 / 3,520	25.3	48.3	85.1	28.6	54.6	96.2
45 / 3,960	23.1	44.1	77.7	26.4	50.4	88.8
49 / 4,312	22.0	42.0	74.0	24.2	46.2	81.4

The majority of the existing DM&E rail line in Minnesota closely parallels State Highway 14. The proximity of the highway would enable emergency vehicles to find an open grade crossing when the preferred route is blocked. In the event a grade crossing is blocked, emergency vehicles can proceed to the front of the line of stopped vehicles and be the first to pass once the crossing is cleared.

In more rural areas, increased vehicle speed on roads with low traffic volumes could reduce emergency response time. Based on an anticipated speed of primarily 45 mph (Table 3.2-23) for post reconstruction DM&E traffic, delays for emergency vehicles at the majority of grade crossings on the existing rail line would be brief. However, delays in rural areas could be significant when responding to emergencies. Increased train speeds would decrease the delay currently experience based on existing train speeds. Slower trains would require emergency vehicles to travel greater distances to detour around the train. However, faster train speeds would require emergency vehicles to arrive at open crossings quickly.

There would be 15 grade crossings on the existing DM&E route in Minnesota where speeds would be restricted to 40 mph, and one where the speed would be restricted to 25 mph. Five grade crossings on the existing DM&E rail line in Blue Earth County, between Eagle Lake and Mankato would have speed restrictions of 40 mph due to curves. The Benton Street grade crossing near Benton Lake in Lincoln County would have a speed restriction of 40 mph due to curves. The Dutchman Street crossing in Lewiston would have a speed restriction of 25 mph due to curves in the Lewiston Hills. All nine grade crossings in Mankato would have speed restrictions of 40 mph due to curves. These crossings are currently on the UP rail line. Delays at crossings with 40 mph restrictions would be slightly longer than those at 45 mph (Table 3.2-25)

Table 3.2-25
Speed Restrictions for Post-Construction Grade Crossings in Minnesota

Milepost	Road Name	Proposed Speed	Reason for Restriction	Town/Rural	County
16.80	Dutchman	25	curves	rural	Winona
125.30	Twp 351	40	curves	rural	Blue Earth
126.00	193 Airport Rd/ CSAH 12	40	curves	rural	Blue Earth
128.00	Richland Ave./Twp 352	40	curves	rural	Blue Earth
128.30	Twp 305	40	curves	rural	Blue Earth
129.50	Twp 273/Lime Valley Road	40	curves	rural	Blue Earth
131-136.8	All Crossings	40	Mankato/curves	Mankato	Blue Earth
261.60	Benton Street	40	curve	Lake Benton	Lincoln

Because total daily blocked crossing time would increased (Table 3.2-24), SEA determined that emergency vehicle response time would also increase. However, the overall significance of any delay is difficult to determine due to the numerous factors involved.

3.2.12 SAFETY

The proposed project has the potential to impact vehicle safety at grade crossings, pedestrian safety at designated crossings and along the rail line, and train safety. These impacts could occur during both reconstruction and operation of the project.

During reconstruction at grade crossings, delays and detours for vehicles could be increased. Motorists using these crossings could become frustrated with these conditions and try to cross during reconstruction, beat trains to avoid delay at other grade crossings, or increase speeds along detour routes. These actions, combined with increased traffic congestion along detour routes could result in unsafe conditions for motorists and pedestrians, potentially leading to increased vehicle/vehicle and vehicle/pedestrian accidents.

Pedestrians also may become frustrated with increased inconvenience from walking further distances and continue to cross the rail line at closed crossings, walk along the rail line right-of-way, or cross at unauthorized locations. These actions could result in injury to pedestrians from reconstruction related activities or rail traffic. Additionally, the presence of reconstruction equipment and materials could attract children who could be injured playing around reconstruction sites. Based on DM&E's estimate of reconstruction at approximately 1.0 mile of rail line per day, any reconstruction activities at grade crossings would be temporary, lasting only from a day or two to possibly a week, depending on the complexity of the crossing.

During reconstruction, rail safety would be a continual concern. Reconstruction activities could damage the track or incomplete reconstruction could lead to derailments. Prior to operation of trains following reconstruction activities, rail beds and track should be inspected for defects to help reduce the likelihood of derailments. Appropriate coordination between reconstruction and train crews would be important in maintaining a safe working environment.

Increased train activity following rail line reconstruction could affect the safety of roadway users at highway/rail grade crossings. To address potential changes in accident frequency, SEA compared existing accident frequency rates with accident frequency rates at all highway/rail grade crossings that would experience an increase in train traffic following rail line reconstruction.

SEA evaluated the accident potential along the entire DM&E main line in Minnesota at locations where the rail line crosses public roadways grade. SEA did not analyze grade-separated crossings because these crossings eliminate the potential for train-vehicle accidents by physically separating the roadway from the railroad track. This included all of the grade crossings along the existing DM&E main line from Winona, Minnesota to the Minnesota/South Dakota border. At these locations, SEA looked at the most recent five years of accident history that was available, and calculated the potential change in the number of years between accidents. SEA's analysis procedure considered the type of existing warning devices, including passive devices (signs or crossbucks), flashing lights, or gates, the average daily traffic (ADT), and train speed at the highway/rail grade crossings.

To evaluate the significance of potential changes in accident frequency in Minnesota, SEA categorized highway/rail grade crossings into two categories:

Category A

Category A consists of highway/rail grade crossings with relatively frequent train vehicle accidents predicted. SEA considered highway/rail grade crossings in Minnesota with accident frequency rates at or above the state's 50th highest accident frequency rate of one accident every eight years (0.125 accident frequency rate) to be Category A highway/rail grade crossings. For all Category A highway/rail grade crossings, SEA considered the relatively small accident frequency rate increase of one accident every 100 years (a 0.01 accident frequency rate increase) to be significant.

Category B

Category B consisted of highway/rail grade crossings with relatively few train vehicle accidents predicted. SEA considered highway/rail grade crossings in Minnesota with accident frequency rates less than one accident every eight years (less than 0.125 accident frequency rate) to be Category B highway/rail grade crossings. For these crossings, SEA considered an accident frequency rate increase of one accident every 20 years (a 0.05 accident frequency rate increase) to be significant.

SEA identified public grade crossings in each county through which the existing DM&E main line would pass. SEA analyzed the potential changes in accident frequency at each of these crossings and determined the overall change in accident frequency for each county. The existing public highway/rail grade crossings in each county were analyzed at the 20 MNT, 50 MNT and 100 MNT levels of operation for each of the proposed Extension Alternatives (Alternatives B, C and D). Each grade crossing was analyzed for each Extension Alternative due to the siding plan required for the existing rail line differing for each Extension Alternative. As the presence of multiple sets of tracks at a crossing has an influence on the safety of the crossing, SEA needed to consider each grade crossing under each Extension Alternative as a particular crossing may have a siding track and the main line under one Extension Alternative, but only the main line under another Extension Alternative. Because accident frequency increases as train speed increases, SEA conservatively used the maximum operating speed indicated by DM&E, 49 miles per hour, for all safety calculations. However, loaded eastbound coal trains would generally be traveling at 45 miles per hour and trains operating on sidings would average approximately 40 miles per hour. At those crossings where speed restrictions would be implemented (Table 3.2-25), the maximum speed used in SEA's analysis was the maximum allowable speed for the particular crossing.

In addition to SEA's analysis, the Minnesota Department of Transportation (DOT) conducted a study of grade crossings along the existing DM&E rail line. The Southern Minnesota Rail Corridor Safety Plan[11] was submitted to SEA in February, 2000, and provided MNDOT's recommendations for grade crossing protection should the project be approved and rail traffic increased. SEA reviewed the study and found MNDOT's analysis consistent with its own. SEA's proposed mitigation for impacts to grade crossing safety is provided in Chapter 7.

The results of SEA's analysis are summarized below. The results presented below apply to all construction alternatives unless it is noted otherwise. Appendix H contains the data for SEA's calculations and the results of SEA's analysis for each crossing.

Winona County

20 MNT

SEA's safety analysis showed that for the 22 public highway/rail grade crossings studied in Winona County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0001 to 0.005, 0.002, or 0.007 for Extension Alternatives B, C, and D respectively. This translates into a range of increase from one accident every 8,936 years to one accident every 191, 406, or 144 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Winona County of 0.026 (Alternative B), 0.019 (Alternative C), and 0.04 (Alternative D). This represents a predicted increase of one accident every 37 (Alternative B), 53 (Alternative C), and 25 years (Alternative D). A total of 2 accidents occurred at grade crossings in Winona County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.004 to 0.014 for Extension Alternatives B and C, and 0.004 to 0.025 for Extension Alternative D. This translates into a range of increase from one accident every 277 years to one accident every 69 (Alternatives B and C) or 40 (Alternative D) years. SEA found these predicted increases to be below the criteria for significance.

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[11] To obtain a copy of the Southern Minnesota Rail Corridor Safety Study, the reader is referred to Timothy J. Spencer at the Minnesota Department of Transportation, Office of Freight, Railroads and Waterways, 395 John Ireland Boulevard, St. Paul, MN 55155-1899, (615) 296-2849.

An increase in the accident frequency is observed for several crossings, resulting in a system-wide change in accident frequency in Winona county of 0.179 for Alternatives B and C and 0.194 for Alternative D. This represents a predicted increase of one accident every 6 or 5 years, respectively.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.008 to 0.031 for Extension Alternatives B and C and 0.008 to 0.043 for Extension Alternative D. This translates into a range of increase from one accident every 131 years to one accident every 32 years for Extension Alternatives B and C, or 23 years for Extension Alternative D. SEA found the predicted increase resulting from the proposed reconstruction was significant at the Center St. crossing (FRA ID No. 193248T, MP 22.7). This grade crossing is classified as Category A. SEA found the predicted increases at other crossings to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings, resulting in a system-wide change in accident frequency in Winona County of 0.34. This represents a predicted increase of one accident every 3 years.

Olmsted County

20 MNT

SEA's safety analysis showed that for the seven public highway/rail grade crossings studied in Olmsted County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0005 to 0.0009 for Extension Alternatives B and C and 0.0005 for Extension Alternative D. This translates into a range of increase from one accident every 2,187 years to one accident every 1,149 years for Extension Alternatives B and C, or 194 years for Extension Alternative D. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Olmsted County of 0.0008 for Alternatives B and C or 0.007 for Alternative D. This represents a predicted increase of one accident every 1,218 (Alternatives B and C) to 134 (Alternative D) years. A total of one accident occurred at grade crossings in Olmsted County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.004 to 0.011 for Extension Alternatives B and C and 0.004 to 0.018 for Extension Alternative D. This translates into a range of increase from one accident every 274 years to one accident every 94 years for Extension Alternatives B and C, or 54 years for Extension Alternative D. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Olmsted County of 0.038 for Alternatives B and C and 0.038 to 0.046 for Alternative D. This represents a predicted increase of one accident every26 or 22 years respectfully.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.007 to 0.023 for Extension Alternatives B and C and 0.007 to 0.031 for Extension Alternative D. This translates into a range of increase from one accident every 136 years to one accident every 44 (Alternatives B and C) to 32 years (Alternative D). SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings, resulting in a system-wide change in accident frequency in Olmsted County of 0.079 for Alternatives B and C and 0.087 for Alternative D. This represents a predicted increase of one accident every 13 or 11 years respectively.

Dodge County

20 MNT

SEA's safety analysis showed that for the 29 public highway/rail grade crossings studied in Dodge County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0003 to 0.008 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 2,970 years to one accident every 130 (Alternatives B, C, and D) years. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Dodge County of 0.055 (Alternative B) 0.048

(Alternative C) and 0.05 (Alternative D). This represents a predicted increase of one accident every 18 (Alternative B), 21 years (Alternative C), and 20 years (Alternative D). A total of 6 accidents occurred at grade crossings in Dodge County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.003 to 0.026 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 370 years to one accident every 39 (Alternatives B, C, and D) years. SEA found these predicted increases resulting from the proposed reconstruction was significant at the 4th Ave. SE crossing (FRA ID No. 193297P, MP 68.90). This grade crossing is classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Dodge County of 0.318 for Alternatives B, 0.31 for Alternative C, and 0.313 for Alternative D. This represents a predicted increase of one accident every 3 years.

100 MNT

SEA's safety analysis showed that for the 29 public highway/rail grade crossings studied in Dodge County, the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.006 to 0.045 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 182 years to one accident every 22 years. SEA found these predicted increases resulting from the proposed reconstruction was significant at County Road 15 (FRA ID No. 193289X, MP 61.30), 4th Ave. SE (FRA ID No. 193297P, MP 68.90) and County Road 1 (FRA ID No. 193371S, MP 76.80). These grade crossings are classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Dodge County of 0.585 for Alternatives B, and D, and -0.0003 for Alternative C. This represents a predicted increase of one accident every 2 years.

Steele County

20 MNT

SEA's safety analysis showed that for the 22 public highway/rail grade crossings studied in Steele County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0006 to 0.002 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 1,697 years to one accident every 663 years, respectively. SEA found these predicted increases to be below the criteria for significance.

A decrease in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Steele County of –0.018. This represents a predicted decrease of one accident every 56 years. A total of 4 accidents occurred at grade crossings in Steele County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.002 to 0.018 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 418 years to one accident every 57 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Steele County of 0.163. This represents a predicted increase of one accident every 6 years.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.006 to 0.036 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 156 years to one accident every 28 years, respectively. SEA found these predicted increases resulting from the proposed reconstruction was significant at US Highway 14 (FRA ID No.193375U, MP 82.90) and SW 92nd Ave (FRA ID No. 193397U, MP 96.40). These grade crossings are classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Steele County of 0.339. This represents a predicted increase of one accident every 3 years in the county. A total of 4 accidents occurred at grade crossings in Steele County between 1993 and 1997.

Waseca County

20 MNT

SEA's safety analysis showed that for the 25 public highway/rail grade crossings studied in Waseca County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0007 to 0.009 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 1,499 years to one accident every 106 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Waseca County of 0.023 for Alternative B and 0.054 for Alternatives C and D. This represents a predicted increase of one accident every 43 (Alternative B) years and 19 (Alternatives C and D) years. A total of 6 accidents occurred at grade crossings in Waseca County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.002 to 0.026 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 448 years to one accident every 38 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Waseca County of 0.271. This represents a predicted increase of one accident every 4 years.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.003 to 0.045 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 386 years to one accident every 22 years, respectively. SEA found these predicted increases resulting from the proposed reconstruction was significant to County Road 37 (FRA ID No. 193356P, MP 116.30). This grade crossing is classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance

An increase in the accident frequency is observed for several grade crossings resulting in a system-wide change in accident frequency in Waseca County of 0.475. This represents a predicted increase of one accident every 2 years.

Blue Earth County

20 MNT

SEA's safety analysis showed that for the 13 public highway/rail grade crossings studied in Blue Earth County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0008 to 0.005 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 1,276 years to one accident every 216 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Blue Earth County of 0.029. This represents a predicted increase of one accident every 34 years. No accidents occurred at grade crossings in Blue Earth County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.006 to 0.016 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 183 years to one accident every 63 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Blue Earth County of 0.108. This represents a predicted increase of one accident every 9 years.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.01 to 0.027 for Extension Alternatives B, C, and D.

This translates into a range of increase from one accident every 99 years to one accident every 38 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Blue Earth County of 0.19. This represents a predicted increase of one accident every 5 years.

Brown County

20 MNT

SEA's safety analysis showed that for the 48 public highway/rail grade crossings studied in Brown County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0005 to 0.021 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 2,108 years to one accident every 48 years, respectively. SEA determined that the predicted increases resulting from the proposed reconstruction was significant at Center Street (FRA ID No. 193494D, MP 165.50) and County Road 8 (FRA ID No. 193589L, MP 183.80). These highway/rail grade crossings are classified as Category A. SEA found the predicted increases at the other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Brown County of 0.211 for Alternative B, 0.197 for Alternative C, and 0.215 for Alternative D. This represents a predicted increase of one accident every 5 years. A total of 13 accidents occurred at grade crossings in Brown County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.005 to 0.051 for Extension Alternative B and to 0.004 to 0.051 for Extension Alternatives C and D. This translates into a range of increase from one accident every 198 years to one accident every 20 years for Alternative B to one accident every 253 years to one accident every 20 years for Alternatives C and D. SEA found these predicted increases resulting from the proposed reconstruction was significant at Center Street (FRA ID No. 193494D, MP 165.50), County Road 8 (FRA ID No. 193589L, MP 183.80), County Road 5 (FRA ID No. 911204C, MP 192.60) and O'Connell Ave. (FRA ID No. 193616F, MP 193.30). These grade crossings are classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Brown County is 0.661. This represents a predicted increase of one accident every 2 years.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.009 to 0.079 for Extension Alternative B and 0.008 to 0.079 for Extension Alternatives C and D. This translates into a range of increase from one accident every 108 years to one accident every 13 years for Alternative B, or one accident every 130 years to one accident every 13 years for Alternatives C and D. SEA found these predicted increases resulting from the proposed reconstruction significant at Center Street (FRA ID No. 193494D, MP 165.50), First Street (FRA ID No. 193525A, MP 165.60), 9th Ave. SE (FRA ID No. 193553D, MP 180.40), County Road 8 (FRA ID No. 193589L, MP 183.80), County Road 5 (FRA ID No. 911204C, MP 192.60) and O'Connell Ave. (FRA ID No. 193616F, MP 193.30). These grade crossings are classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several grade crossings resulting in a system-wide change in accident frequency in Brown County is 1.1. This represents a predicted increase of one accident every year.

Redwood County

20 MNT

SEA's safety analysis showed that for the 24 public highway/rail grade crossings studied in Redwood County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.001 to 0.024 for Extension Alternative B, from 0.0008 to 0.004 for Extension Alternative C and from 0.0009 to 0.004 for Extension Alternative D. This translates into a range of increase from one accident every 721 years to one accident every 41 years (Alternative B), or a range of increase from one accident every 1,249 (Alternative C) or 1,090 (Alternative D) years to one accident every 229 years (Alternatives C and D). SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several grade crossings resulting in a system-wide change in accident frequency in Redwood County of 0.071 for Alternative B, 0.053 for Alternative C, and 0.06 for Alternative D. This represents a predicted increase of one accident every 14 (Alternative B), 19 (Alternative C), and 17 (Alternative D) years. A total of one accident occurred at grade crossings in Redwood County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that for the 24 public highway/rail grade crossings studied in Redwood County, the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.005 to 0.015 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 192 years to one accident every 69 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several grade crossings resulting in a system-wide change in accident frequency in Redwood County of 0.196. This represents a predicted increase of one accident every 5 years.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.01 to 0.025 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 105 years to one accident every 40 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Redwood County of 0.343. This represents a predicted increase of one accident every 3 years.

Lyon County

20 MNT

SEA's safety analysis showed that for the 25 public highway/rail grade crossings studied in Lyon County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0002 to 0.031 for Extension Alternative B, and 0.0007 (Alternative C), 0.0008 (Alternative D) to 0.012 for Extension Alternatives C and D. This translates into a range of increase from one accident every 5,993 (Alternative B), 1,428 (Alternative C), 1,294 (Alternative D) years to one accident every 32 (Alternative B), or 33 (Alternative C and D) years. SEA found these predicted increases resulting from the proposed reconstruction was significant at County Road 14 (FRA ID No. 193699W, milepost 228.00). This crossing is classified as

Category A. SEA found the predicted increases at the other crossings to be below the criteria for significance.

An increase in the accident frequency is observed for several grade crossings in a system-wide change in accident frequency in Lyon County of 0.086 for Alternative B, 0.063 for Alternative C, and 0.07 for Alternative D. This represents a predicted increase of one accident every 12 (Alternative B), 16 (Alternative C), and 14 (Alternative D) years. A total of 4 accidents occurred at grade crossings in Lyon County between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.003 to 0.037 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 372 years to one accident every 27 years, respectively. SEA found these predicted increases resulting from the proposed reconstruction was significant at County Road 14 (FRA ID No. 193699W, MP 228.00). This crossing is classified as Category A. SEA found the predicted increases at the other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several grade crossings resulting in a system-wide change in accident frequency in Lyon County of 0.226. This represents a predicted increase of one accident every 4 years.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.005 to 0.062 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 204 years to one accident every 16 years, respectively. SEA found these predicted increases resulting from the proposed reconstruction was significant at County Road 14 (FRA ID No. 193699W, MP 228.00). This crossing is classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several grade crossings in a system-wide change in accident frequency in Lyon County of 0.394. This represents a predicted increase of one accident every 3 years.

Lincoln County

20 MNT

SEA's safety analysis showed that for the 23 public highway/rail grade crossings studied in Lincoln County, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0002 to 0.017 for Extension Alternative B and 0.0005 to 0.009 for Extension Alternatives C and D. This translates into a range of increase from one accident every 6,142 years to one accident every 57 years (Alternative B) or, one accident every 2,053 years to one accident every 112 years (Alternatives C and D). SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Lincoln County of 0.073 for Alternative B and 0.059 for Alternative C and D. This represents a predicted increase of one accident every 14 (Alternative B), and 17 (Alternatives C and D) years. A total of 2 accidents occurred at grade crossings in Lincoln between 1993 and 1997.

50 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.004 to 0.027 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 236 years to one accident every 37 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An increase in the accident frequency is observed for several grade crossings resulting in a system-wide change in accident frequency in Lincoln County of 0.202. This represents a predicted increase of one accident every 5 years.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.008 to 0.045 for Extension Alternatives B, C, and D. This translates into a range of increase from one accident every 124 years to one accident every 22 years, respectively. SEA found these predicted increases resulting from the proposed reconstruction was significant at Benton Street (FRA ID No. 193802G, MP 261.90). This crossing is classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance.

An increase in the accident frequency is observed for several crossings resulting in a system-wide change in accident frequency in Lincoln County of 0.353. This represents a predicted increase of one accident every 3 years.

Summary

SEA determined that potential increases in rail operations on the existing DM&E system would significantly increase the predicted accident risk in Minnesota at 3 public highway/rail grade crossings under the 20 MNT level of operation. SEA determined that a potential increase in rail operations on the existing DM&E system would significantly increase the predicted accident risk in Minnesota at 6 public highway/rail grade crossings under the 50 MNT level of operation. SEA determined that a potential increase in rail operations on the existing DM&E system would significantly increase the predicted accident risk in Minnesota at 15 public highway/rail grade crossings under the 100 MNT level of operation.

The existing DM&E rail line is crossed several hundred times each school day by school buses (Table 3.1-17). These buses compose a portion of the ADT for these grade crossings. Based on the existing level of crossing protection, several of the grade crossings used by school buses would experience a significant increase in accident risk.

Evaluation of grade crossings involves the potential for train/vehicle collisions or incidents. However, grade crossing safety impacts could also occur to pedestrians. Increased rail traffic would increase the likelihood of pedestrians encountering a train when attempting to cross the rail line. Initially, the increased frequency and speed of trains would be unfamiliar to pedestrians used to present train numbers and speeds. This could lead to pedestrians over estimating the time required for a train to reach the crossing, presenting a potentially dangerous situation if they attempt to cross the tracks.

It is likely pedestrians currently cross the rail line at various points that are not designated grade crossings. Trains would not typically sound warning horns at these locations. Pedestrians engaging in this type of crossing could also be unfamiliar with the new train frequencies and speed. The presence of pedestrians in unauthorized areas could place them at risk of injury, as well as risk to the locomotive should it be required to make an emergency stop. Changes in the behavior of these individuals would be necessary to reduce the risk of potentially significant impacts.

Reconstruction of the existing DM&E rail line has the potential to have a dramatic impact on rail safety. DM&E currently has one of the worst safety records in the rail industry as discussed in Chapter 1, with accident rates ranging from 41.4 to 36.0 accidents per million rail miles between 1992 and 1997. The train accident rate for Class I railroads was 3.45 per million train miles in 1995, and 3.40 in 1996. DM&E had an accident rate in 1995 of 41.14 accidents per millions trains miles and 36.0 in 1996. This represents a rate are over 10 times that for other Class I railroads. The accident rate per million train miles for Class II railroads was 5.87 in 1995, and 5.72 in 1996. DM&E's accident rate of 41.41 for 1995, and 36.00 for 1996 is considerably higher than other class two railroads. Following project completion, DM&E would become a new Class I railroad, and likely attain a level of safety comparable to other Class I railroads. DM&E's current average of 2-3 major, and over a dozen lesser derailments would be expected to be significantly reduced. Substantially improved safety, resulting in fewer derailments, less damage to cars, locomotives, rail track and bed, property, and reduced loss of shipper's materials, would be expected.

3.2.13 HAZARDOUS MATERIALS

Transportation of Hazardous Materials

Neither reconstruction nor operation of the proposed project would result in an increase in the types or amounts of hazardous materials transported by DM&E. However, following completion of the proposed reconstruction of the existing rail line, the benefits of increased rail safety would reduce the likelihood of an accident involving the release of hazardous materials or contaminants. While the likelihood of such an incident is low due to the minimal quantities of such materials transported, this risk would be further reduced.

Hazardous Waste Sites

SEA identified potential impacts on hazardous waste sites due to proposed reconstruction activities that would take place. Hazardous waste sites are places where releases of hazardous materials have been reported to local, state, or Federal authorities. Related environmental concerns include facilities licensed to treat, store, or dispose of hazardous materials, leaking underground storage tanks (LUSTs), solid waste facilities, and landfills (SWFs/LFs). Sixty-one such sites were identified along the existing DM&E right-of-way, including 15 LUST and 20 ERNS sites. During reconstruction, earthmoving activities could expose contaminants to construction workers, nearby residents, and railway workers. Contaminants may also be exposed to wildlife, vegetation, surface water, and groundwater. If contaminants are moving away from the initial site of contamination, disturbance to soils or local geology can either reduce or accelerate contaminant migration. Because specific site information for each identified site is not available, it is not possible to determine the potential impacts of reconstruction on these sites. DM&E should coordinate with the EPA, Minnesota Pollution Control Agency, and the Minnesota Department of Environment and Natural Resources Protection Agency to obtain information on the extent of contamination to determine if it occurs within the existing right-of-way, whether reconstruction activities have the potential to impact the site, and any protective actions necessary to avoid disturbance to these sites during reconstruction.

During project operation, no impacts should occur to existing hazardous materials sites. There is the potential during railroad operations for contamination to occur, due to spills during derailments or improper handling of hazardous materials that are necessary for normal operations, and result in new sites of contamination. However, it is very unlikely, due to the expected reduction in derailments and regulations regarding handling, storage, and disposal of hazardous materials, that this would occur.

3.2.14 ENERGY RESOURCES

Transportation of Energy Resources

The proposed project has the potential to significantly impact the transportation of energy resources. Upgrading the existing DM&E main line would result in DM&E successfully constructing a rail line extension into the PRB and obtaining contracts to transport coal from the basin to utilities throughout the upper midwest. As discussed in Chapter 1, this would provide a more cost-effective transportation route for PRB coal. It would help alleviate service and congestion problems at the mines and within the PRB, making transportation of PRB coal for each of the rail carriers serving the basin more efficient and reliable. Energy resources provided by PRB coal would be available to the user at a more economical rate, higher reliability, and greater efficiency.

Utilization of Energy Resources

For many of the same reasons as discussed under Transportation of Energy Resources, the proposed project has the potential to significantly impact the utilization of energy resources, particularly relating to PRB coal and diesel fuel. The shorter routes provided by the project would reduce transportation costs for PRB coal, increasing the attractiveness for utilities to switch to PRB coal or increase their use of it. Use of PRB coal is projected to increase and the proposed project would provide additional rail capacity to help the mines meet production projections and reliably deliver the coal to the user, enabling the resource to be utilized.

The shorter route would result in significant fuel savings. Based on mileage to specific power plants discussed in Chapter 2, the DM&E route could provide mileage savings of several hundred miles over the routes of other rail carriers. This would result in a potential savings of hundreds of thousands of gallons of diesel fuel annually, providing a much wiser use of this resource.

Improved utilization of energy resources could also occur at the mines. Mines would not be able to expand their present operations beyond the permitted level. However, as discussed in Chapter 1, many of these mines do not meet these production levels, in part due to inadequate rail service. Operation of the proposed project may enable these mines to meet permitted production level and thus supply increased amounts of coal to utilities. PRB coal is more economical to mine than many eastern coals due to the relatively shallow overlying layers of soil and the thickness of the coal seams. This allows the use of lower quantities of energy, such as diesel fuel and electricity required to operate the mining equipment necessary to extract, store, and load the coal. Increased utilization of PRB coal over expanded use of eastern coals would also make more efficient use of energy necessary to provide coal to the users.

Recyclable Commodities

DM&E currently transports only limited amounts of recyclable commodities. These include 30-40 boxcars per month of scrap paper and approximately 300 carloads annually of scrap steel. Reconstruction of the existing DM&E main line would require removal of hundreds of miles of rail, up to 1.4 million railroad ties, bridge materials, and tons of ballast and other rail bed material. Due to its age, most of the rail would likely be unsuitable for reuse and would be sold for scrap to be recycled. Ties and wooden bridge materials could be sold for landscaping or other uses, but most are expected to be in such poor shape that they would be unmarketable. DM&E could potentially sell or give them to electrical utilities currently using ties as a fuel source for electric generation. However, large quantities may require disposal in appropriate landfills. Steel bridge materials which could not be incorporated into upgraded bridges would be sold for scrap. Stone materials in some bridges and culverts may be used in railroad landscaping or sold for that purpose. Unmarketable materials could be used for fill, other aggregate uses, or landfilled. Ballast and other rail bed material no longer suitable for rail operations could be used as fill material or aggregate for other projects such as roadways.

Reconstruction of the existing rail line would not only generate large volumes of potentially recyclable materials, but would also generate a potential market for them. Rail and ties generated by other rail carrier reconstruction and abandonment activities could generate materials suitable for use by DM&E. Although these materials would likely be unsuitable for the rail line, they may be usable as part of yard and industrial sidings, spur lines to serve existing shippers, or temporarily to complete initial reconstruction should sufficient new materials be unavailable. During operation, these materials would be replaced as new materials became available.

3.2.15 CULTURAL RESOURCES

Fourteen archaeological sites have been identified in or immediately adjacent to the railroad right-of-way (Table 3.1-21). All of these sites are prehistoric. There are also 18 "Site Leads"[12] which do not have site numbers, but are assigned letters (Table 3.1-22). Field investigation of the "Site Leads" indicates none are located within the existing right-of-way and would therefore not be impacted by the project.

The most significant sites are the Brian site (21BW0004), a mound complex near New Ulm, Minnesota and the Cambria site 21BE0002 near Cambria, Minnesota. Both have intact components within the right-of-way and could be destroyed by reconstruction activities. The portion of the sites that are within the right-of-way should be mitigated in accordance with the PA[13]. None of the other 12 sites have intact components within the right-of-way. Two sites bisected by the railroad right-of-way are the Wussow site (21BE0066), a lithic scatter, and the Sand Bank site (21OL0011), an unnamed habitation site. No evidence of either site was observed in the rail right-of-way, and neither would be impacted by the proposed project. The remaining 10 sites are located in the general vicinity of the project area, but further investigation indicated that none of these sites still exist within the railroad right-of-way or the portion of the site that may have been in the right-of-way has been destroyed. It is possible that a portion of some of the sites did exist within the right-of-way but those portions were destroyed by the original construction of the railroad in the late 19th and early 20th centuries. However, should additional right-of-way be acquired in the vicinity of these 14 known sites, additional investigation would be required in accordance with the Programmatic Agreement (PA) (Appendix J).

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[12] Site leads in Minnesota are areas where it is suspected that a site exists but no on-the-ground confirmation is available. They may or may not exist and the minimum area depicted on the Minnesota Historical Society maps is ¼ of a square mile and may include up to one square mile

[13] A Programmatic Agreement means a document that records the terms and conditions agreed upon to resolve the potential adverse effects of a Federal agency program, complex undertaking or other situation.

Areas with a high probability of containing as yet unrecorded archaeological sites or Traditional Cultural Properties (TCP's)[14] that are eligible for the National Register may be adversely impacted by the construction of sidings, yards, or other associated railroad facilities should reconstruction or operation require acquisition of additional construction or permanent right-of-way. These high probability areas[15] are normally found near a permanent water source and would require additional investigations in accordance with the PA once this agreement is finalized.

There are 390 bridges and culverts (108 open deck pile bridges, 76 steel bridges, 18 stone arch bridges, 178 stone culverts, 3 concrete culverts. 2 cast iron culverts, and 3 misc. bridge designs) along the existing rail line. Five buildings, including three depots, two of which are listed in the National Register and one which is recommended eligible, are also located along the existing rail line. The remaining buildings, a grain storage building, Tyler at MP No. 253.7, and a freight house are recommended eligible for listing in the National Register. The portion of the DM&E railroad from Winona, Minnesota to Wasta, South Dakota appears to be eligible for listing in the National Register as a linear historic district. Therefore, all of the extant structures are either eligible for the NRHP or are a contributing property of a linear historic district.

Replacement or extensive modification of National Register eligible bridges and culverts would result in an adverse impact to historic resources. Removal or modification of historic structures could also result in an adverse impact. Reconstruction of the existing rail line could result in it no longer being eligible as a linear historic district. Any impacts associated with reconstruction of the existing rail line would require mitigation in accordance with the PA. Further evaluation and coordination with the Minnesota State Historic Preservation Officer would be necessary to determine the exact impact and significance of any impacts due to project reconstruction. However, because of the number of potentially eligible structures and the potential of the project to be a linear historic district, the impacts to historic resources could be significant.

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[14] A Traditional Cultural Property can be defined generally as one that is eligible for inclusion in the National Register because of its association with the cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. Examples include: 1) a location associated with the traditional beliefs of a Native American group about its origins, its culture history, or the nature of the world; 2) a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural roles or practice; 3) a location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity (includes collection of medicinal plants).

[15] A high probability area is an area where it is expected that archaeological sites exist but have not been recorded. High probability areas are normally areas near past and present permanent water sources.

During operation of the project, impacts to cultural and historic resources would primarily relate to increases in rail traffic along the existing rail line. However, rail traffic increases would have no impact on archaeological resources. Historic resources identified along the rail line were all originally developed as part of the railroad or as associated structures. The operation of the project would not change the nature or context in which these structures are found. No damage to them is anticipated from vibration or other operational impacts. No impacts to historic or cultural resources are anticipated during operation of the project.

3.2.16 SOCIOECONOMICS

Regardless of which alternative is selected for extending the existing DM&E system into the PRB or the new construction alternatives proposed for Minnesota, the socioeconomic impacts of the project would be basically the same, with the exception that the location of yards could affect different counties. These impacts relate primarily to the short-term impacts during reconstruction activities associated with the presence of construction workers, anticipated to last approximately two years, as well as to the long-term operational impacts of the project, such as railroad-assessed taxes and permanent jobs, that could be anticipated for the next several decades. The following discusses those impacts related to reconstruction of the existing rail line only. Socioeconomic impacts related to rail yard and bypass construction and operation are discussed in Sections 3.3, 3.4, and 3.5.

3.2.16.1 Population and Demographics

Short-term increases in population in all counties containing existing rail line could be expected during reconstruction. Over 500, two-year jobs are expected that are directly related to reconstruction in Minnesota. While many of these would likely be filled by local workers, other workers specialized in rail construction would likely relocate to the area. These workers would likely not locate permanently in the area, rather they would move to the area of the next project following completion of their work on this project. They would likely utilize temporary lodging, such as motels, hotels, rental properties, recreational vehicle (RV) parks, and campgrounds. Additionally, they would likely relocate during reconstruction as it progresses across the state to be closer to the actual job site. Communities such as Winona, Rochester, and Mankato would be likely locations for workers to have temporary residency due to these larger communities having abundant amenities and services such as lodging, restaurants, and grocery stores.

U.S. Highway 14, paralleling the existing rail line, would provide easy access to the project area from points along the rail line, allowing local workers to retain their current residences and commute to the project site. Additionally, jobs, both temporary and permanent, in the service areas (restaurants, convenience stores, bars, grocery stores, etc.) would likely increase throughout the area as the demand for these services increased with the influx of construction workers. These jobs would also likely be filled locally. However, the amount of reconstruction activity and demand for other types of jobs may entice some individuals seeking employment to relocate to the area. This number would be small and would likely occur in the larger communities along the rail line, such as Rochester and Mankato, that have experienced increases in population greater than those expected to result from reconstruction of this project. Table 3.2-26 provides a summary of the potential direct and indirect construction jobs associated with the project in Minnesota. The minimal additional number should not pose a problem for these communities.

During operation of the project, permanent employment would be added to the area along the rail line. The increased traffic on the DM&E rail line would require hiring additional train crews, maintenance personnel, and office staff. Most of these additional, permanent jobs would be associated with rail yards and are discussed in Section 3.5.

Table 3.2-26
Potential Employment Compared to Population Statistics for Project Area Counties - Minnesota

County	Construction Employment		Percent of County Population/County Unemployed (1994)	Change in County Population (1986-1994)
	Direct	Indirect		
Winona	42	24	<1/3.8	4.2
Olmsted	57	32	<1/3.5	15.2
Dodge	28	15	<1/5.4	8.1
Steele	49	28	<1/3.7	4.6
Waseca	49	28	<1/4.3	-0.2
Blue Earth	85	48	<1/2.9	5.9
Brown	111	57	<1/4.0	-3.4
Redwood	41	23	<1/3.0	-7.6
Lyon	42	24	<1/3.5	-0.1

Table 3.2-26 Potential Employment Compared to Population Statistics for Project Area Counties - Minnesota				
County	**Construction Employment**		**Percent of County Population/County Unemployed (1994)**	**Change in County Population (1986-1994)**
	Direct	**Indirect**		
Lincoln	34	20	<1/4.8	-10.5
Total	538	299	---	---

3.2.16.2 Employment and Income

Reconstruction is anticipated to take two to three years and would occur simultaneously in three states. Therefore, separate construction work forces would be required in each state. Over 500 direct construction related jobs are anticipated in Minnesota, with a two-year duration. These jobs would be spread throughout the State, with the total number of workers divided into numerous smaller crews responsible for a particular aspect of reconstruction, such as rail bed preparation or rail placement, or completion of a particular geographic area of the project.

Construction jobs would require a wide range of workers and activities. More generalized jobs such as heavy equipment operators, carpenters, electricians, landscapers, truck drivers, and mechanics would likely be filled by local workers, contractors, and farmers (during times between planting and harvest and during the winter). However, because of the number of workers required, non-local workers may also be required to fill these positions. Additionally, many unskilled laborer or apprentice positions would also be available. More specialized workers, such as rail construction contractors, would likely be non-local. Such contractors in-state could be utilized. However, as these workers tend to be specialized in what they do and relocate from job to job, they would likely be filled by non-local and out-of-state workers.

In addition to direct reconstruction jobs, approximately 300 indirect jobs are anticipated to be generated by the proposed project. These jobs would occur over the two-year reconstruction period and would likely continue for two to three years after reconstruction completion. These jobs would result from the presence of construction workers, both local and non-local, that would be present during reconstruction. Local workers would have consistent incomes resulting in having more money to spend locally on goods and services. They would continue to spend following reconstruction completion, thus resulting in the two to three year post-construction requirement for jobs. Non-local workers would spend portions of their income locally, increasing the demand for goods and services. Additionally, non-local workers would require lodging, using local hotels, motels, rental properties, and trailer and RV parks. All these economic sectors would be expected to increase in value due to increased demand. Shortages, particularly during the summer tourist months, could occur, potentially resulting in increases in construction of hotels and other lodging facilities. Local residents may be able to supplement their incomes by renting rooms or entire homes to construction workers. Goods and services, such as those provided by restaurants, convenience stores, gas stations, movie theaters, bars, bowling alleys, and grocery stores, would increase in demand due to the increased population from construction workers. New businesses such as these could be expected, resulting in additional construction activity, providing jobs for construction workers as well as staff for the new business. Table 3.2-27 provides estimates of construction related earning in the project counties. A portion of these earnings would be available to purchase goods and services from local business and provide tax revenues for the State and county.

Table 3.2-27
Minnesota Railroad Construction Earnings by County

County	Estimated Earnings ($)
Winona	6,780,000
Olmsted	9,311,000
Dodge	4,474,000
Steele	7,996,000
Waseca	7,965,000
Blue Earth	13,814,000
Brown	15,006,000
Redwood	6,609,000
Lyon	6,780,000
Lincoln	5,587,000
Total	**84,322,000**

The population in the project area counties is over 350,000 (Table 3.1-25), with an average unemployment rate of 3.9 percent. At this rate, approximately 14,000 persons are unemployed, well over the number of local workers anticipated to be required during project reconstruction. Although these persons may not have the skills for rail reconstruction, they would likely have some skill that could provide for employment in one or more of the many job areas created during reconstruction, including non-skilled laborer and apprentice positions, and service industries. Workers in laborer and apprentice positions would have the opportunity to learn a skill or trade and obtain permanent employment in that field following completion of rail reconstruction. More skilled workers in many areas could be expected to seek employment at positions created by rail line reconstruction as higher wages would likely be paid for these jobs. This would create positions for less skilled employees as well as opportunities for persons seeking to learn new job skills. Unemployment throughout the project area could be expected to decline. However, the demand for labor could result in competition for workers and thus higher wages and better benefits to attract qualified employees. This seems likely due to the low unemployment within the region.

Easy access throughout the project area is provided by U.S. Highway 14 that parallels the existing rail line. Persons throughout the area could be expected to travel some distance for opportunities at higher wages at jobs related to project reconstruction. Additionally, the attractiveness of many good paying jobs in the area may result in non-local workers, or those unemployed, relocating to the area in order to seek employment. Such relocations would be minimal and would not impact county-level employment.

DM&E would likely acquire a variety of reconstruction materials and supplies within the immediate and adjacent project area. These could include concrete, steel, ties, rail, ballast rock, fill, subgrade and subballast material, fencing, lumber, and a variety of other materials. It would be preferable to acquire these locally due to increased costs associated with importing materials. While it is likely many materials would not be available locally, many local businesses would be able to provide what materials they could. These would include commercial gravel, rock, and sand quarry operations, hardware stores, lumber yards, ready mix plants, and other reconstruction related material dealers. Providers of these materials could expect an increase in sales during the reconstruction period.

During project operation, new permanent jobs related to continuing rail operations would be created. Additional jobs for train crews, maintenance personnel, and office workers would be available. New jobs comparable in salary and benefits to those of other Class I railroads would be expected. These jobs would primarily be associated with rail yards and are discussed in Section 3.5.

Potential project impacts to employment and income are expected to be beneficial and potentially significant, particularly during reconstruction. Employment opportunities are expected to increase, and unemployment to decrease, throughout the area. Lower unemployment would result from an increase in the demand for workers, resulting in higher wages and better benefits potentially being offered to attract qualified persons. Following reconstruction, high-paying railroad jobs would continue to benefit the labor market by providing high-paying jobs in the area.

3.2.16.3 Public Services and Fiscal Condition

Numerous services are provided by the various counties in the project area as discussed in Section 3.1.14.3. For all of the counties in the project area, the increase in employment represents less than one percent of the total population of the county. It is also less than the unemployment rate for each county. All the counties should be able to absorb the increases in population, both temporary and permanent, without experiencing any problems in continuing to provide adequate services. In those counties experiencing population declines (Waseca, Brown, Redwood, Lyon, and Lincoln), population increases due to this project may help offset some of the population decline, increasing the county tax base and providing increased revenue for county services.

Counties are able to fund a variety of services by collecting property taxes and other taxes. As part of the proposed project, all the area counties should receive additional tax revenues. These revenues would result from new railroad facilities being constructed, existing facilities upgraded, and increased spending by construction workers and additional permanently employed individuals within the county. Table 3.2-28 provides an estimate of the sales and use taxes generated in each county during project reconstruction due to purchases of materials for reconstruction and spending by construction workers for goods and services. A portion of these taxes would be available to the county.

Table 3.2-28
Sales and Use Taxes Generated by County-Minnesota

County	Taxes ($)
Winona	1,534,206
Olmsted	1,988,952
Dodge	1,020,386
Steele	1,739,796
Waseca	1,665,135
Blue Earth	3,264,321

Table 3.2-28 Sales and Use Taxes Generated by County-Minnesota	
County	**Taxes ($)**
Brown	2,819,506
Redwood	1,524,588
Lyon	1,534,206
Lincoln	1,285,612
Total	**18,376,708**

Additionally, DM&E would pay property taxes on its facilities. These taxes would vary between counties, depending on the actual facilities located in the county and the county's tax assessment rates. Table 3.2-29 provides an estimate of the property taxes DM&E would pay each year under the 40 MNT and 100 MNT operating scenarios.[16] These amounts are compared to the taxes DM&E paid in 1997 and the total taxes collected by the counties in 1997 (Table 3.1-28) also provides information on total taxes collected in 1998. However, for consistent comparison those amounts are not included here.

Table 3.2-29 Comparison of Property Taxes Paid and Anticipated for the Proposed Project				
County	**DM&E 1997 Taxes Paid ($)**	**Taxes Assessed at 40 MNT ($)**	**Taxes Assessed at 100 MNT ($)**	**Total Taxes Collected 1997 ($)**
Winona	37,146	841,000	1,016,000	28,145,907
Olmsted	99,873	1,026,000	1,240,000	104,123,674
Dodge	29,304	607,000	733,000	10,553,092
Steele	19,376	710,000	858,000	6,663,657

[16] The 40 MNT and 100 MNT levels are both included as the increase in operations would require construction of additional facilities that would increase the value of DM&E property within each county. Because the level of operation would be subject to the market, both of these levels are presented for comparison. The 20 MNT level of operation was not evaluated in the economic report prepared for the project. This level of traffic would occur at project startup and is anticipated to only occur for a short time before operating levels increase. Therefore, 40 MNT and 100 MNT likely are a more accurate reflection of the potential long term tax impacts.

Table 3.2-29 Comparison of Property Taxes Paid and Anticipated for the Proposed Project				
County	**DM&E 1997 Taxes Paid ($)**	**Taxes Assessed at 40 MNT ($)**	**Taxes Assessed at 100 MNT ($)**	**Total Taxes Collected 1997 ($)**
Waseca	64,386	624,000	754,000	14,676,110
Blue Earth	41,243	1,258,000	1,400,000	41,525,666
Brown	89,280	1,305,000	1,632,000	18,793,212
Redwood	32,902	809,000	977,000	14,793,768
Lyon	61,549	847,000	1,024,000	17,729,120
Lincoln	29,638	727,000	879,000	5,485,238
Total	**504,697**	**8,754,000**	**10,513,000**	**262,489,444**

As can be seen, property taxes under the proposed project would increase substantially over those currently assessed for DM&E. This additional revenue would contribute significant additional funds to each of the counties. These funds would enable the counties to continue to provide their current services, possibly enabling them to upgrade or increase what they are able to provide. Any increase in county population due to the project should easily be accommodated by the increased revenues generated by the project.

Overall, the project should have a beneficial impact on the services offered by the counties and the counties' fiscal conditions. Increased tax revenues should easily offset any additional financial burden the project may cause the counties while still providing additional revenues for county services.

3.2.17 ENVIRONMENTAL JUSTICE

Four census block groups in Minnesota along the existing DM&E rail line were determined by SEA to meet the criteria for classification as environmental justice.[17] All 4 of these census block groups are in Winona County, and are in the town of Winona. All but one of these

[17] SEA determined census block groups are present in Rochester, Olmsted County; Owatonna, Steele County; and Mankato, Blue Earth County that meet the criteria for classification as environmental justice. Potential impacts to these environmental justice communities are discussed in Sections 3.3 and 3.4.

census block groups meets the criteria for classification as environmental justice due to having a percentage of persons in the census block group at or below the poverty level that was 10 percent or more than the percentage for the county in which the census block group was located. The one remaining census block group was classified as environmental justice because over 50 percent of its population is considered low income.

SEA evaluated the impacts of the proposed increases in rail traffic to these environmental justice census block groups and compared these impacts to the impacts expected to non-environmental justice census block groups (Appendix D). SEA's analysis determined that none of the census block groups in Winona County would experience disproportionate impacts due to increased rail traffic.

SEA also analyzed census block groups to determine if any environmental census block groups in Winona County, not determined to be disproportionately impacted for a single resource, would be disproportionately impacted by the proposed rail line reconstruction and increased levels of operation by being adversely impacted by more than one evaluation criteria (noise, safety, air, transportation, etc) (Appendix D). SEA's analysis did not identify any environmental justice census block groups that would be adversely impacted by more than one evaluation criteria. Therefore, no disproportionate impacts would be borne by environmental justice communities by being adversely affected by multiple impact categories.

3.2.18 RECREATION

A wide variety of recreational opportunities are available within the project area as discussed in Section 3.1.16. Although a wide variety of opportunities are available, these opportunities are only capable of accommodating small numbers of people at any given time. Many of these opportunities, such as in hunting, fishing, camping, snowmobiling, and hiking are outdoor oriented and are not restricted to the immediate vicinity of the rail line.

During reconstruction of the existing rail line, outdoor recreation activities immediately adjacent to the rail line could be negatively impacted by reconstruction noise, human activity, fugitive dust, and increased vehicle traffic and congestion. These impacts would likely detract from the overall solitude of the area, reducing the enjoyment of the recreational experience. During off-days, construction workers may take advantage of nearby opportunities, leading to increased use and potential crowding. Regular users and tourists may experience frustration at larger than normal crowds and reconstruction related disturbance. Recreational activities subject to such disturbance would likely experience a decline during the period of reconstruction.

When occurring in close proximity to the existing DM&E rail line, outdoor recreational activities such as hunting, fishing, hiking, camping, and bike riding could be impacted by increased noise from the additional rail traffic during operation of the project. Noise increases could detract from the overall solitude of the area and reduce the enjoyment of the recreational experience. Noise may disturb game immediately adjacent to the rail line, potentially reducing its availability to hunters. However, reduction along the rail line would increase availability in other areas, increasing opportunities in those areas. Impacts to fishing could include noise disturbance to fisherpersons, reduced access in proximity to crossings, increased roadway congestion due to increased traffic, and reductions in water quality during reconstruction. However, in most cases, if hunting and fishing success in areas adjacent to the rail line is good, these activities would still occur and most participants would cope with reductions in convenience and enjoyment rather than seek similar, less successful opportunities elsewhere.

Impacts to hikers and bikers using both trails and parks would include noise disturbance to the recreational experience, reduced safety where crossings of the rail line would be required, and possibly increased road congestion to access these areas. Impacts to trail users would occur primarily at and in close proximity to locations where trails cross the rail line. Snowmobilers should experience little impact with the exception of potentially reduced safety when crossing the rail line. Noise from snowmobiles would shield the user from train noise. Therefore, train noise would have no impact on the recreational experience of these users. However, noise from snowmobiles could create a dangerous situation for the user and nearby persons by preventing them from hearing an on-coming train. This would be particularly dangerous if crossings of the rail line are made at unprotected grade crossings.

At established recreational areas, such as Sibley Park and Minneopa State Park, operation of the project could increase park noise levels, particularly in areas close to the rail line. Users of these areas would seek the more remote or distant portions of these facilities, increasing the use of those areas and competition between users for them. Traffic delays on roads accessing these areas may also detract from the users enjoyment. Accessability to and from recreation areas could be hindered due to increased rail traffic at road crossings. Safety issues may arise from the presence of unit coal trains operating in close proximity to public use areas at relatively high speeds and across access roads. Overnight campers and users would likely experience disturbance from nighttime train operations, interrupting sleep and enjoyment of the quiet rural setting. Some patrons utilizing recreation sites may elect to use other areas. Any revenues generated to the facilities and local communities could be reduced.

DM&E indicated in its Application to the Board that it intends to develop a tourism passenger excursion train. This service would be designed to provide tourism and recreational opportunities along the rail line by providing interested persons, particularly "railroad buffs," the opportunity to take a ride on a train. DM&E does not have specific plans in mind but has indicted considering such things as dinner trips, wildlife viewing trips, and transport to the Black Hills region from communities at the eastern end of its system. No regular service, suitable for commuters would be provided. The service would be designed solely to provide a recreational experience for the rider.

Overall, impacts to recreation are expected to be localized and generally restricted to those few individuals selecting to take advantage of the opportunities near the rail line. Except for areas such as Minneopa State Park, recreational use along the rail line would be scattered. Currently, existing rail operations expose existing recreationists to impacts similar to those expected to continue and increase during operation of the proposed project. Impacts to individuals engaging in various recreational activities, however, would vary. To some, the project would not be perceived as an impact; to others it would ruin their experience and cause them to seek other areas; to others impacts would be recognized but tolerated. It is expected that during operation of the project, impacts to some individual's recreation may be significant. However, abundant recreational opportunities exist throughout Minnesota and the project area. While the operation of the project may reduce recreational participation in the immediate area of the rail line, the abundance of other recreational opportunities, the overall small number of users along the existing rail line, and expected smaller number who would perceive a significant impact are expected to result in the project having only minimal impacts to recreation. However, to a small number of individuals, impacts could be significant.

3.2.19 AESTHETICS

3.2.19.1 Wild and Scenic Rivers

There are no designated wild or scenic rivers in the project area.

3.2.19.2 Viewsheds/Scenic Values

The reconstruction activities would cause reconstruction-related visual impacts. Visual impacts would be restricted to the existing railroad right-of-way and would include ground and vegetation disturbance, vegetation clearing, and the presence of heavy equipment. Although the rail line does not pass through any designated scenic areas or viewsheds, the generally flat topography would make disturbance visible for an extended distance. However, most impacts to visibility would be observed at grade crossings. In these areas reconstruction would be similar to that of road construction. In more rural areas, reconstruction would be similar to agricultural activities such as plowing and clearing fences of brush. Additionally, in most areas, reconstruction activities would appear similar to maintenance activities. No significant visual impacts would result from reconstruction of the existing rail line.

Operation-related impacts to visibility would also occur. These impacts would result from the installation of new rail structures such as bridges, culverts, rail, ties, and ballast. Clearing of vegetation would make these structures more visible. Until some degree of weathering occurs, dulling the appearance of new materials, they would continue to be visible within the landscape. However, the existing area has contained a rail line for over 100 years and other, up-to-date rail lines are also present. The reconstructed rail line is not anticipated to significantly differ in appearance from the existing rail line. Therefore, no impacts to visibility are anticipated due to the operation of the reconstructed rail line.

3.2.19.3 Nightlights

The use of artificial lighting during the reconstruction phase of the project would present an impact to those who live within sight of the lights. If near the rail line, reconstruction, security, or other associated lighting could disturb residents trying to sleep.

The lights from passing trains during the dark hours of the day may have minor impacts on the people living near the railroad during project operation. However, any impacts would be restricted to those residents in close proximity to the rail line. Because train headlights would be directed down the rail line not outward away from it, impacts would be minimal and similar to those presently occurring, although they would occur more frequently then at present. Any changes in nightlights resulting from the reconstruction and operation of the proposed project would not significantly alter the character of the nighttime environment of the project area.

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3.3 MINNESOTA BYPASSES

In its Application to the Board, DM&E identified segments of track where it would not be reasonable to operate over what is essentially a competitor's rail line. Section 3.3.1 discusses the potential environmental impacts associated with alternatives proposed by DM&E to bypass Union Pacific Railroad Company (UP) trackage that they operate over through Mankato. In a request to modify the alternatives proposed by DM&E in its Application, the City of Rochester, Minnesota submitted a bypass alternative for the existing rail line through town. Section 3.3.2 discusses the potential environmental impacts associated with the alternatives proposed for the Rochester bypass. Volume V provides detailed maps of the alternatives for these bypasses. A detailed discussion of alternatives is presented in Chapter 2.

3.3.1 MANKATO BYPASS

DM&E has applied to the Board for authority to construct and operate a new rail line at Mankato, Minnesota. The rail line would bypass a section of rail line owned and operated by UP in Mankato, over which DM&E has limited trackage rights. Based on its Application to the Board, the trackage rights that DM&E has with UP, subjects DM&E's rail line operations to control by a foreign carrier, which then has the ability to restrict DM&E's access and, subsequently, its customer service. Construction of a bypass of the UP rail line would allow DM&E to eliminate these restrictions and potentially increase operational efficiency and customer service. The following compares the potential impacts that would be expected to occur as a result of various project alternatives. The alternatives include the No-Action and two bypass alternatives as described below.

Alternative M-1: No-Action

This alternative would deny the total project. No new rail line construction would occur. The DM&E railroad would continue to operate through Mankato, subject to trackage rights with UP.

Alternative M-2: Southern Bypass

Alternative M-2 would involve construction of a bypass around the south side of Mankato. Alternative M-2 would originate from DM&E existing rail line approximately 1.25 miles east of Eagle Lake, Minnesota and pass south of the City of Mankato. It would rejoin the existing DM&E rail line west of Mankato (Figure 2-3). Alternative M-2 would be approximately 13.3 miles in length. Chapter 2 provides a detailed description of Alternative M-2.

Alternative M-3: Existing Rail Corridor

This alternative would involve use of the existing DM&E rail line as well as the existing UP rail corridor to create a connecting rail line between the two portions of DM&E's rail line on the east and west sides of Mankato. The new connecting rail line would pass through the City of Mankato within existing rail corridor. Approximately 10.1 miles of this alternative would involve the reconstruction of existing DM&E rail line. Approximately 5.5 miles would be new rail line construction adjacent to existing UP rail line. When discussing Alternative M-3, the term, existing corridor, denotes the combined DM&E and UP rail corridors which would form the route through Mankato. Based on the DM&E siding plan, SEA determined that one siding location is proposed for the existing rail segment of Alternative M-3. The following discussion outlines the potential impacts of the Mankato bypass alternatives by resource.

3.3.1.1 Climate

No impacts to the climate in the project area would result from the construction of the Mankato alternatives.

3.3.1.2 Topography

Alternative M-1: No-Action

No construction activities would result from this alternative. Modifications to the local topography were made when the original railroad was built nearly 100 years ago. No further impacts would result from this alternative.

Alternative M-2: Southern Bypass

Construction of Alternative M-2 could create impacts to the topography of the project area from cut and fill operations designed to provide a suitable grade for the construction of the proposed rail line. Significant cut and fill would be necessary for part of the alternative, particularly where it would cross the Blue Earth River. The drainage of the project area could be affected by alterations in the terrain as a result of these activities. Modifications to stream banks and channelization could be necessary at stream crossings. Any changes to the natural course of the stream could alter drainage in the project area. The presence of the new rail line could also create a damming effect for surface water which could alter the drainage of surrounding areas during project operation.

Alternative M-3: Existing Rail Corridor

The construction and operation of Alternative M-3 within the existing UP corridor would not likely alter the topography of the project area. The majority of Alternative M-3 would be built adjacent to existing rail line and through developed areas. Stream channelization or bank modifications could be required at stream crossings due to construction or modification of bridges over streams and the Blue Earth River.

3.3.1.3 Geology and Soils

Alternative M-1: No-Action

Any soil impacts associated with the construction or reconstruction of rail line would not be experienced with this alternative. Operational impacts would continue to be limited to the potential for soil contamination from a derailment or accidental spill. The potential for impact would be the same as the present level. Minor localized soil disturbance resulting from general maintenance of the existing track could also occur. No prime farmland would be affected.

Alternative M-2: Southern Bypass

Soils located along the bypass alignment vary in composition. They consist of silt loam, silty clay loam and clay loam mixtures. The primary soil types are Storden, Marna, Kilkenny, Cordova, Shorewood and Alluvial. The slopes vary greatly, from 0-2 percent (Alluvial and Cordova) to more than 45 percent (Storden). The main characteristic which is prevalent throughout the area is a high water table. Many of the soils are unsuitable for urban development. Drainage is needed for dependable production of crops. Some areas are prone to flood hazards.

Approximately 322.4 acres of soil would be disturbed and permanently converted to rail line right-of-way, based on an average right-of-way width of 200 feet. Soil could be lost due to erosion from wind and precipitation. Soils within the proposed right-of-way could become compacted from use of heavy equipment during the construction of the rail line. Soils outside the proposed right-of-way could experience similar impacts if used for construction access and service roads. Soil mixing would likely occur during preparation of the proposed rail bed during construction. Disturbed and compacted soils could lose much of their original productivity if bacteria, fungi, and other essential microorganisms are destroyed. However, these soils would be removed from these uses other than for rail facilities. Approximately 96.0 acres of prime farmland would be lost due to construction of this alternative. This land would be permanently converted into railroad right-of-way making it no longer available for crop production.

Operational impacts, including erosion and disturbance, could occur as a result of right-of-way maintenance activities. Additionally, soil contamination could occur in the event of an accidental spill of hazardous substances.

Alternative M-3: Existing Rail Corridor

The majority of this alternative, approximately 15.0 miles, would involve construction or reconstruction within an already disturbed and established rail corridor. Therefore, impacts to soil would be minimal. Approximately 2,900 feet of Alternative M-3 would be located outside this corridor, requiring new rail line right-of-way. Approximately 1,800 feet would cross a quarry. Only approximately 1,200 feet of newly constructed rail line would affect previously undisturbed soils. Construction activities and excavation could disturb as much as approximately 44.9 acres of land. Potential impacts which could occur to soils during construction and reconstruction activities include mixing, compaction, erosion, and loss of productivity in undeveloped areas. Additionally, similar disturbances could occur to soils outside the proposed right-of-way if construction activities are required outside the proposed right-of-way. Alternative M-3 would not result in the loss of any prime farmland.

Potential impacts during the operation of the rail line would include soil disturbance from right-of-way maintenance activities and weed control, and contamination in the unlikely event of an accidental spill. Potential impacts resulting from the operation of this alternative would likely be limited to the soils within the proposed right-of-way.

3.3.1.3.1 Paleontological Resources

Paleontological resources may occur throughout the Mankato project area. Any such resources occurring along the existing rail line right-of-way for Alternatives M-1 and M-3 were likely destroyed during initial construction of rail facilities within the rail corridor. Construction of a parallel rail line, Alternative M-3, through Mankato along the existing UP right-of-way would not likely cause any additional impacts. The limited earthwork required for reconstruction of the existing rail line would not likely disturb any paleontological resources. Additionally, the deep soils and agricultural cultivation in the project area and scattered nature of paleontological resources in Minnesota make it unlikely such resources would be encountered within the proposed right-of-way for Alternative M-2. However, cut activities along the Blue Earth River could encounter such resources.

3.3.1.4 Land Use

The land use types identified and evaluated for the various Mankato alternatives include residential, business and industrial, public, and agricultural. Land uses on both sides of the rail line are identified and totaled. The distances across roadways and waterways are not evaluated as a land use in this section and account for the difference in land use totals. Impacts to public facilities such as hospitals and schools are generally addressed in this section as components of land use categories, but are not quantified as a land use type.

3.3.1.4.1 Agriculture

The approximate amount of land use designated as agricultural was measured to determine the linear miles adjacent to each alternative. Land deemed to be agricultural is that which appears to be or has been cultivated for the production of crops and pasture or grassland that has not been cultivated. Woodland is also included in this category due to the undeveloped nature of the land and the production of wood products from woodland areas.

Alternative M-1: No-Action

This alternative would not cause any impacts to adjacent agricultural land, approximately 22.0 miles, that does not already exist. No construction activities would occur and there would be no loss of agricultural land associated with this alternative.

Alternative M-2: Southern Bypass

Alternative M-2 would be adjacent to approximately 16.2 miles of agriculture land. Approximately 5.6 miles of woody vegetation would be cleared. Approximately 264.2 acres, of which approximately 196.4 acres is agricultural land and 67.8 acres is woody vegetation, would be converted to railroad right-of-way for the construction of Alternative M-2. While farmers would be compensated for this land, they would no longer have the farm revenue generated from use of these acres. Potential impacts during construction could also include soil mixing and compaction, crop damage, and erosion.

During construction and operation of the proposed rail line, area farmers could be affected by reduced access to fields and safety concerns. The proposed rail line would cross numerous agricultural fields, resulting in portions of those fields being located on opposite sides of the rail line from the farmers' headquarters. Access to these areas would be limited to existing roads or, if installed, equipment crossings of the proposed rail line.

During operation of the project, farmers would be required to either drive equipment on local roads, crossing the proposed rail line at public grade crossings to access these fields, or cross the proposed rail line at unprotected private crossings. Under both scenarios, farmers would experience increased inconvenience and reduced safety. Farmers would be required to cross railroad tracks at unprotected crossings to move farm machinery or travel on roadways with large, slow moving farm machinery which could create a safety hazard to themselves, motorists traveling on the same roadways, and operating trains and their crews. In some cases, the size of the field on one side of the proposed rail line could be too small to economically continue to farm. These lands could be sold to adjacent farmers and consolidated with other existing fields, or taken out of production and left fallow. Removal from production would decrease the available land and production of these farms, ultimately reducing farm income.

Alternative M-3: Existing Rail Corridor

Alternative M-3 would be adjacent to approximately 17.6 miles of agricultural land and approximately 4.4 miles of wooded lots. The majority of construction for this alternative would occur within the existing rail corridor. However, some woody vegetation along the proposed right-of-way would be cleared or trimmed. Potential impacts to agricultural lands would include soil compaction and crop damage from construction equipment where cropland has encroached on the existing right-or-way. Impacts could also occur if construction activities are required outside the existing right-of-way.

3.3.1.4.2 Residential

Alternative M-1: No-Action

Residential land, approximately 1.8 miles, adjacent to the existing rail line would continue to experience the same effects of rail line operation that are currently present. No additional residential land would be affected by Alternative M-1.

Alternative M-2: Southern Bypass

Approximately 2.0 miles of residential land would be adjacent to Alternative M-2. Approximately 24.2 acres of residential land would be converted to rail line right-of-way. Construction of Alternative M-2 could potentially require the acquisition and removal of eight houses to accommodate the proposed rail line right-of-way. Impacts to residential land adjacent to the proposed right-of-way would include increased noise, dust, safety concerns, and traffic delays during the construction and operation of the proposed rail line. These impacts are discussed in more detail in later sections.

Alternative M-3: Existing Rail Corridor

Approximately 1.8 miles of residential land was identified adjacent to Alternative M-3. Residents in these areas would be affected by similar impacts to those currently resulting from existing rail traffic. However, increased rail traffic due to projected future coal traffic would result in increased noise, dust, safety concerns, and traffic delays during construction and operation above those levels already occurring.

3.3.1.4.3 Business and Industry

Business and industrial land would include any land area that contains shops, store fronts, manufacturing facilities, and other places of commerce. Section 3.2.6.3 describes the type of impacts that could occur to commercial uses, including increased noise, dust, safety concerns, and traffic delays.

Alternative M-1: No-Action

Businesses along the 6.5 miles of existing rail line adjacent to commercial land would continue to experience the same type and level of impact from existing rail operations under Alternative M-1.

Alternative M-2: Southern Bypass

Alternative M-2 would be adjacent to approximately 0.2 mile of business and industrial land. Approximately 1.8 acres of land described as commercial or business would be converted to railroad right-of-way by the construction of Alternative M-2. Conversion of this land would be permanent. Two businesses located within the railroad right-of-way would be required to relocate. Those not within the right-of-way, adjacent to the proposed rail line, along the 0.2 mile of business and industrial land, could experience impacts such as increased noise, dust, safety concerns, and traffic delays for employees and patrons during construction and operation of the proposed rail line. However, construction of the proposed rail line in the undeveloped areas south and east of Mankato, in conjunction with present construction of the Mankato South Route highway, could make this area attractive for future commercial development.

Alternative M-3: Existing Rail Corridor

There are approximately 6.5 miles of business and industrial land adjacent to the existing rail corridor through Mankato. Approximately 1,800 feet of new rail line, approximately 5.0 acres of new rail line right-of-way, would be constructed across the north end of a quarry.

Temporary impacts, such as reduced access for customers and employees, safety concerns due to the presence of large construction equipment, and possible interruption of rail service, could occur to businesses located adjacent to the existing rail line during construction. During construction and operation, increased dust, noise and traffic delays could affect businesses adjacent to the proposed rail corridor. Businesses served by UP along this section of rail line could experience rail service inconveniences, such as delayed delivery or pick-up of cars, due to construction activities affecting rail traffic movement. Conditions and impacts would likely improve during operation following construction of the DM&E route due to improved track conditions, new yard facilities, and elimination of operational conflicts between DM&E and UP. If the material found in the quarry crossed by this alternative is suitable for rail line construction material, it could be utilized as a material source, increasing the demand for the quarry material.

3.3.1.4.4 Public Services

Alternative M-1: No-Action

Public services in and around Mankato would continue to experience the current level of impacts from the operation of the DM&E railroad. Deteriorated track conditions pose higher risks for accidents and derailments that could require public services such as police, fire department and ambulance services in the event of such occurrences.

Alternative M-2: Southern Bypass

The only public facility within 1.0 mile of this alternative would be a church, approximately 0.7 mile away. Other public facilities, such as emergency services, would potentially experience reduced access, due to construction at grade crossings or an operating train blocking roadway crossings. However, due to the distance of the rail line from public facilities, any access impacts would likely be an inconvenience and would not have a significant impact on the public's use of these facilities. During operation, grade crossings located along the proposed rail line could require the establishment of new routes for emergency vehicles to avoid vehicle delays during an emergency event.

Alternative M-3: Existing Rail Corridor

The existing railroad corridor in Mankato passes within approximately 480 feet of the nearest church. The existing railroad corridor also passes within approximately 1,500 feet of the nearest hospital, and approximately 1,000 feet of the nearest school. Impacts to these public facilities would include increased noise, vehicle delays, reduced access, and reduced safety. These types of impacts are described in Section 3.2.6.5. During operation, new routes would need to be established for emergency vehicles to avoid closed or blocked roadways particularly due to the proximity of the nearest hospital. Two new grade separations at 3rd Avenue and Industrial Road, proposed for Alternative M-3, would help provide improved access for emergency vehicles during train passing events.

3.3.1.4.5 Public Lands

Alternative M-1: No-Action

Sibley Park lies adjacent to the northern side of the existing rail line. Sakatah Singing Hills State Trail crosses the existing rail line near Lime Siding, east of Mankato. Public lands adjacent to the existing rail line would continue to experience the same level of impacts currently present due to existing DM&E and UP rail traffic.

Alternative M-2: Southern Bypass

The Red Jacket Trail and the South Route multi-use trail would each be crossed once by Alternative M-2. During construction and operation, those using the trail would be subject to increased noise, dust, safety concerns, and inconvenience. During operation, the increased number and speed of trains could pose a potential safety hazard to trail users. Increased noise would occur in areas around the trail crossings, particularly when trains sound their horns. Overall, impacts would generally be restricted to short sections of trail near the rail line and only users in those portions of the trail would be affected.

Alternative M-3: Existing Rail Corridor

There are approximately 2.1 miles of public lands adjacent to Alternative M-3. These public lands include the Minnesota River Trail, which lies adjacent to the existing rail line for approximately 0.9 mile; Sibley Park, which is adjacent to 0.2 mile of the existing rail line; and the campgrounds west of Sibley Park, which are adjacent to the existing rail line for approximately 0.5 mile. Sibley Park is operated by the City of Mankato and includes a zoo and facilities for picnicking, sledding, and outdoor concerts. Park visitors and campers may experience increased noise, dust, and ground disturbance in proximity to this alternative.

Alternative M-3 would include a new bike/pedestrian ramp connecting the Minnesota River Trail with the walkway on the Belgrade/Mulberry Bridge. This ramp would provide grade-separated access to the Minnesota River Trail, allowing access at Main Street that requires pedestrians to cross the rail line grade, to be closed. A pedestrian underpass on Hubbel Avenue would also be constructed to provide grade-separated access for pedestrians within the residential area located adjacent to the existing rail line. A new pedestrian/bike bridge over the Blue Earth River in conjunction with the rail bridge, with access under both sides of the new rail bridge are also included. Construction of the pedestrian/bike bridge would provide access to trails along both sides of the river with grade separated access to the bridge. A bridge across the Blue Earth River would be built and dedicated solely to pedestrian/bike traffic.

The Sakatah Singing Hills State Trail crosses the existing DM&E rail line near Lime Siding, east of Mankato, and runs parallel to the existing rail line for approximately 0.5 mile. Reconstruction activities could impede users at the crossing and where the trail parallels the existing rail line, as well as detract from the recreational experience due to noise, dust, ground disturbance and the presence of construction equipment and activity. These impacts would only occur during the short period of reconstruction. During operation, the increased number and speed of trains could pose a potential safety hazard to trail users. Increased noise would occur in areas around the crossing, particularly while trains sound their horns. Overall, impacts would generally be restricted to the short sections of trail near the existing rail line and only users in those portions of the trial would be affected.

3.3.1.5 Water Resources

3.3.1.5.1 Surface Water Impacts

Alternative M-1: No-Action

The existing rail corridor in Mankato crosses 12 streams, including the Blue Earth River. There would be no new construction or reconstruction resulting from this alternative. Therefore, no impact to surface waters would result from this alternative.

Alternative M-2: Southern Bypass

The proposed bypass route of Alternative M-2 would cross 10 streams, one of which, the Blue Earth River, is perennial. These streams would be temporarily affected during construction. Disturbed earth and removal of ground cover adjacent to stream crossings would cause soil erosion within the proposed right-of-way, leading to sedimentation and increased suspended solids in surface waters. Installation of culverts and bridges would require construction work that could have similar effects. Accidental spills during construction would introduce contaminants into streams. However, contaminants would normally be present only in limited quantities, reducing the potential for a spill of sufficient size to significantly affect water quality. Impacts from construction could include the potential alteration of stream banks and stream beds due to construction of stream crossings, potentially changing drainage patterns, stream flow velocities and floodplain characteristics. During operation, the rail bed could act as a dam for surface drainage of the surrounding area, affecting water levels in area streams. Potential spills of hazardous substances during operation of the proposed rail line could cause contamination of surface waters.

Alternative M-3: Existing Rail Corridor

The existing rail corridor crosses 12 streams, as would Alternative M-3. The Blue Earth River is the only perennial stream it crosses. Increased sediment in streams during construction along the existing rail line would be temporary. Long term impacts would include alterations to stream banks and stream beds that would be necessary during construction or modification of bridges. Potential spills of hazardous substances could cause contamination of streams during operation. However, spills are unlikely, due to expected reduction in derailments and compliance with regulatory procedures for handling, storing, and disposing of potential contaminants and the minimal amounts transported by DM&E.

3.3.1.5.2 Wetlands

Alternative M-1: No-Action

Approximately 22.4 acres of emergent wetland and approximately 1.1 acres of forested wetlands are present within the existing rail corridor. Since no new construction would occur and operation levels would remain the same, no impacts are expected to occur to wetlands as a result of this alternative.

Alternative M-2: Southern Bypass

Approximately 24.0 acres of emergent wetlands were identified within the proposed right-of-way of Alternative M-2. These wetlands would be lost during rail line construction. The loss of wetlands would include a loss of their beneficial characteristics, such as flood control, ground water recharge, storm water storage, and water purification. Run-off from the project area during construction could cause increased sedimentation in adjacent wetland areas. Construction equipment could be required to work within or travel through adjacent wetland areas, resulting in additional impacts to wetlands.

Alternative M-3: Existing Rail Corridor

Approximately 22.4 acres of emergent wetland and approximately 1.1 acres of forested wetlands were identified within the existing rail corridor through Mankato. These wetlands would be lost during construction activities. During operation, impacts to wetlands could include disturbance of wetland inhabitants from passing trains and maintenance activities, degradation during maintenance activities, and potential introduction of contaminants in the unlikely event of a spill.

3.3.1.5.3 Ground Water

None of the Mankato alternatives would involve subsurface alterations that could potentially affect ground water. However, in the event of an accidental spill of hazardous materials (lubricants, fuel) leaching of these hazardous materials could potentially contaminate groundwater due to the high water table present in the area. The potential would also exist for contamination to occur from the accidental spill of fuels or oils during maintenance or operation of trains along the rail line. Since the transport of hazardous materials by DM&E is minimal, the potential of a spill involving hazardous materials is also minimal. Additionally, the small amounts of hazardous materials transported would not likely create a significant risk if such an event would occur. Under the M-2 and M-3 alternatives, the improved rail line would further reduce the potential for a derailment and subsequent spill.

3.3.1.6 Air Quality

The potential for affects to air quality would be similar for each alternative. The amount of emissions during construction is relative to the type of construction and the length of the alternative. New construction would have greater emissions than reconstruction of existing rail line due to more heavy equipment, particularly for earthwork, greater ground disturbance, and longer time necessary to complete the work. Longer alternatives would have greater emissions during operation due to increased fuel consumption. Emissions from motor vehicles waiting at grade crossings could also contribute to local air quality effects during operation of the rail line. Air quality impacts were calculated according to the methodology presented in Appendix E. Table 3.3-1 presents gross-ton miles for each alternative.

Table 3.3-1
Alternative Operations Data for Mankato, MN

Alternative	Length (miles)	Fuel Factor GTM*/gallon	Number of Trains	Gross Tons/year	GTM
M-1	17.70	993.8	3 trains	8,817,165	156,063,820
M-2	10.47	993.8	11 trains 21 trains 37 trains	32,329,605 72,067,118 137,587,275	338,490,964.35 754,542,725.46 1,440,538,769.25
M-3	17.70	993.8	11 trains 21 trains 37 trains	32,329,605 72,067,118 137,587,275	572,234,008.50 1,275,587,988.60 2,435,294,767.50

*gross ton miles

Alternative M-1: No-Action

This alternative would involve a continuation of present operations on the existing DM&E and UP rail lines. No construction impacts would occur. The number of motor vehicles stopped at crossings and the length of time that they wait for a train to pass would remain at the current level. Train traffic on the existing DM&E and UP rail lines would continue to operate at slow speeds, and locomotive emissions (Table 3.3-2) would remain the same.

Alternative M-2: Southern Bypass

This alternative is the shortest in length of the Mankato alternatives, approximately 13.3 miles, but involves the most new construction. The estimated amount of each criteria pollutant produced by this alternative, under operating levels of 20, 50, and 100 MNT per year, is presented in Table 3.3-2. SEA also examined the issue of fugitive coal dust and exposure to diesel locomotive emissions. These are discussed in more detail in Section 3.2.8. Construction would cause temporary reductions in local ambient air quality as a result of fugitive dust and emissions generated by construction equipment, as discussed in Section 3.2.8. During operation of Alternative M-2, new rail/highway grade crossings would be created. Air emissions from vehicles would be increased at these locations if one or more vehicles are stopped for a passing train. Train speeds and the low volume ADT for these crossings would minimize any increases in vehicle emissions due to few vehicles being delayed for only a short time. None of the proposed grade crossings along Alternative M-2 meet the Board's criteria for evaluation of vehicle emissions. All occur in generally rural areas with little vehicle traffic and good air quality.

Alternative M-3: Existing Rail Corridor

This alternative involves the reconstruction of approximately 10.1 miles of existing DM&E rail line and the new construction of approximately 5.5 miles of new rail line generally parallel to the existing UP rail line. Impacts during construction and operation would be similar to those described for Alternative M-2, including increased fugitive dust, and increased emissions from equipment and queued vehicles, as presented in Section 3.2.8. Five road closings and two new grade separations are included as part of this alternative. Vehicle emissions from delayed vehicles would be eliminated at closed crossings, as vehicles would no longer be stopped for trains at these locations. A decrease in vehicle emissions would be expected due to these road closures, grade separations, and increased train speeds. The estimated amount of air emissions from locomotives produced by this alternative under operating levels of 20, 50, and 100 MNT per year is presented in Table 3.3-2.

Table 3.3-2
Emissions Levels of Proposed Alternatives for Mankato, MN

Alternate	Number of Trains	Emissions Levels											
		HC (tpy)		CO (tpy)		NO_X (tpy)		SO_2 (tpy)		PM_{10} (tpy)		Pb (tpy)	
		Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold
M-1	3 trains	N/A	100	N/A	100	N/A	100	N/A	100	N/A	100	N/A	0.6
M-2	11 trains	1.98	100	5.39	100	28.17	100	3.37	100	1.37	100	0.000110	0.6
	21 trains	6.51		17.68		92.40		11.05		4.45		0.000362	
	37 trains	13.98		37.95		**198.30**		23.72		9.56		0.000776	
M-3	11 trains	4.53	100	12.30	100	64.25	100	7.69	100	3.10	100	0.000251	0.6
	21 trains	12.18		33.07		**172.83**		20.67		8.33		0.000676	
	37 trains	24.81		67.34		**351.87**		42.09		16.96		0.001376	

HC - Hydrocarbons
SO_2 - Sulfur Dioxide
CO - Carbon Monoxide
NO_X - Oxides of Nitrogen
PM_{10} - Particulate Matter (less than 10 microns in diameter)
Pb - Lead
tpy - tons per year

3.3.1.7 Noise and Vibration

The construction, reconstruction, and operation of the Mankato alternatives would result in increased noise levels. Section 3.2.9 provides a description of noise associated with rail line construction and operation such as construction equipment, wayside noise, and locomotive horn sounding. SEA calculated the distance (contour) from the rail line at which the average daily noise level (L_{dn}) would be equal to or greater than 65 audible noise decibels (dBA) and 70 dBA during project operation. This distance was calculated for the existing level of railroad traffic as well as the proposed levels of railroad traffic for the alternatives. SEA also identified the structures potentially affected by any increases in vibration (Section 3.3.1.7.2). In addition, the City of Mankato conducted its own extensive evaluation of potential noise impacts associated with the use of the existing rail corridor, Alternative M-3. SEA found this evaluation to be similar to its own evaluation. However, SEA determined its study calculated noise impacts to be greater than the Mankato report. The Mankato report also only addressed Alternative M-3. Because of these reasons, SEA felt that to be more conservative in presenting the potential impacts of the project and apply a consistent analysis for each of the Mankato alternatives, the results of only its analysis should be presented here.[1]

3.3.1.7.1 Noise

Alternative M-1: No-Action

No construction related noise changes would occur as a result of this alternative. The number of noise sensitive receptors exposed to average daily noise levels of 65 dBA and 70 dBA would remain at 826 and 293 respectively (Table 3.3-3).

Alternative M-2: Southern Bypass

Increased noise levels would occur during the construction and operation of Alternative M-2. Machinery used for construction activities such as grading, rail installation and site preparation would produce noise as described in Section 3.2.9. Blasting, if necessary for cut excavation, would also contribute to noise levels. During operation of the proposed rail line, rail traffic along the Alternative M-2 alignment would increase noise level exposure to noise sensitive receptors along the proposed rail line. The sparsely populated rural setting, in which Alternative

[1] The report submitted by the City of Mankato, "Zone of Impact and Noise Vibration Study," is available for public reference at the Blue Earth County Library and the Mankato City Clerks Office. For more information on this report, see www.ci.mankato.mn.us or contact the Mankato Public Information Office at (507) 387-8516 or e-mail at sschulz@city.mankato.mn.us.

M-2 would be built, would limit the number of noise sensitive receptors that would be exposed to increased noise levels during both construction and operation of the project. The number of noise sensitive receptors exposed to average daily noise levels of 65 dBA and 70 dBA during rail line operation along Alternative M-2 are presented in Table 3.3-4.

Alternative M-3: Existing Rail Corridor

Increased noise would occur during construction and operation along the existing rail line for Alternative M-3. A description of impacts, such as noise created by construction machinery and the duration of construction activities is presented in Section 3.2.9. The number of noise sensitive receptors that would be affected by noise during operation of Alternative M-3 would increase as rail traffic increases. Table 3.3-5 shows the number of noise sensitive receptors that would be exposed to average daily noise levels of 65 dBA and 70 dBA during rail line operation.

Table 3.3-3
Alternative M-1
Number of Noise Sensitive Receptors - 65 dBA L_{dn}/70 dBA L_{dn}

Operation Level and Location	Wayside	Wayside/Horn	Horn	Total
Existing Conditions - 10 trains*				
Blue Earth County	**5/0**	**46/13**	**755/280**	**826/293**
Eagle Lake	0/0	8/1	119/53	127/54
Mankato	0/0	36/11	645/222	681/233

*Includes 7 UP trains and 3 DM&E trains.

Table 3.3-4
Alternative M-2
Number of Noise Sensitive Receptors - 65 dBA L_{dn}/70 dBA L_{dn}

Operation Level and Location	Wayside	Wayside/Horn	Horn	Total
Existing Conditions - 0 trains				
Blue Earth County	**0/0**	**0/0**	**0/0**	**0/0**
Eagle Lake	0/0	0/0	0/0	0/0
Mankato	0/0	0/0	0/0	0/0
11 Trains				
Blue Earth County	**4/0**	**29/13**	**114/42**	**147/55**
Eagle Lake	0/0	0/0	0/0	0/0
Mankato	0/0	0/0	0/0	0/0

Table 3.3-4
Alternative M-2
Number of Noise Sensitive Receptors - 65 dBA L_{dn}/70 dBA L_{dn}

Operation Level and Location	Wayside	Wayside/Horn	Horn	Total
21 Trains				
Blue Earth County	**6/0**	**37/22**	**232/81**	**275/103**
Eagle Lake	0/0	0/0	0/0	0/0
Mankato	0/0	0/0	0/0	0/0
37 Trains				
Blue Earth County	**6/1**	**44/30**	**384/146**	**434/177**
Eagle Lake	0/0	0/0	0/0	0/0
Mankato	0/0	0/0	0/0	0/0

Table 3.3-5
Alternative M-3
Number of Noise Sensitive Receptors - 65 dBA L_{dn}/70 dBA L_{dn}

Operation Level* and Location	Wayside	Wayside/Horn	Horn	Total
Existing Conditions - 10 Trains				
Blue Earth County	**5/0**	**46/13**	**755/280**	**826/293**
Eagle Lake	0/0	8/1	120/53	128/54
Mankato	0/0	36/11	645/222	681/233
18 Trains				
Blue Earth County	**7/1**	**101/34**	**1,040/481**	**1,148/516**
Eagle Lake	0/	17/3	125/61	142/64
Mankato	0/0	79 / 31	902 / 415	981 / 446
28 Trains				
Blue Earth County	**7/5**	**170/46**	**1,584/589**	**1,729/640**
Eagle Lake	0/	33/7	222/104	225/111
Mankato	0/0	130/38	1,343/478	1,473/516
44 Trains				
Blue Earth County	**7/7**	**265/98**	**2,235/965**	**2,507/1,071**
Eagle Lake	0/0	49/18	312/152	361/170
Mankato	0/0	208/78	1,895/799	2,103/877

*Includes 11,21, and 37 DM&E trains and 7 UP trains operating along the existing rail corridor.

3.3.1.7.2 Vibration

Structures along the Mankato rail line alternatives would experience varying degrees of vibration and different levels of impact. Those within 100 feet are most likely to experience potential structural damage as discussed in Section 3.2.9.1. Beyond 100 feet, the only potential effects would be to hospitals or other facilities with sensitive equipment. Increased vibration could cause such equipment to function improperly. Structures beyond 100 feet would not likely be structurally damaged. However, vibration may be felt and cause concern or annoyance.

Alternative M-1: No-Action

There are 14 houses located within 100 feet of the existing rail line. There are 63 houses located between 101 and 200 feet of the existing rail line, and 159 houses within 201 and 400 feet of the existing rail line (Table 3.3-6). The level of vibration created by the existing DM&E and UP rail traffic along the existing corridor would remain the same. The level of vibration created by existing rail traffic is not considered damaging, although it was reported by residents during scoping, along the existing rail line to be annoying.

Alternative M-2: Southern Bypass

The number of houses which could potentially experience vibration from this alternative is provided in Table 3.3-6. Unlike houses built in proximity to the existing rail line, houses built in the area along Alternative M-2 may not contain the structural fortifications appropriate for the vibration levels generated by operation of a rail line. Therefore, these residences, especially the seven within 100 feet of the proposed rail line, may be more susceptible to damage from vibration. No facilities using sensitive equipment are known to be present along Alternative M-2.

Alternative M-3: Existing Rail Corridor

The number of houses located within the specific ranges from the existing rail line is the same as the number of houses for Alternative M-1 (Table 3.3-6). Houses built in proximity to the existing rail line may have structural fortification appropriate for the vibration levels generated by operation of a rail line preventing them from being damaged by current rail operations. However, these structures could experience an increase in vibration, based on DM&E's proposed transport of heavier loads with increased numbers of longer trains potentially resulting in damage. The closest facility to Alternative M-3, potentially containing sensitive equipment, is a hospital located approximately 1,500 feet away. At this distance, no impacts from vibration are expected.

The Corps of Engineers in conjunction with the Cities of Le Hillier and Mankato have constructed a system of flood walls and levees to prevent flooding during high water events on the Minnesota and Blue Earth Rivers. The existing UP corridor passes immediately adjacent to these flood control projects. Under Alternative M-3, DM&E would route more trains carrying heavier loads, likely increasing ground vibration. As part of its railway plan, DM&E would take over and improve the existing UP rail line closest to the levee and flood control wall, constructing a new rail line for the UP immediately landward of the existing rail line. As the trains pass adjacent to the flood control features considerable vibration can be expected, the extent of this vibration and the effects on the flood control features are unknown without additional soil evaluation and vibration testing. In a worst case scenario, the vibration from the rail traffic could liquefy the soil during a flood event causing the levee or floodwall to fail. The results of such a failure would cause flooding of residential and commercial areas of Le Hillier and Mankato. DM&E conducted an investigation of the potential projects effect on flood control projects[2] and determined some areas could be impacted. However, this report was based largely on visual inspection of the area and no conclusions regarding the extent of potential impacts were made. The City of Mankato also evaluated the potential impacts of vibration on the flood control projects.[3] The city's evaluation provided a discussion of the potential ways the flood projects could be affected and reasons it could be affected. However, no conclusions on if or to what extent impacts would occur was presented. To date, the necessary information and testing to determine the potential impacts on the flood control projects is not available because of the limited access to the UP railway corridor. Once such tests are completed and the results are submitted, the COE and City of Mankato will evaluate if Alternative M-3 would have an impact on these flood control facilities.

[2] For more information on the investigation conducted by DM&E, contact Ray Gigear, Project Engineer; Dakota, Minnesota & Eastern Railroad Corporation; PO Box 178; Brookings, SD, 57006; (605) 697-2400.

[3] The Mankato report addressing potential vibration impacts, "Zone of Impact and Noise Vibration Study," is available for public reference at the Blue Earth County Library and the Mankato City Clerks Office. For more information on this report, see www.ci.mankato.mn.us or contact the Mankato Public Information Office at (507) 387-8516 or e-mail at sschulz@city.mankato.mn.us.

Table 3.3-6 Mankato Alternatives Structures Potentially Impacted by Vibration				
Alternative	**0-100 feet**	**101-200 feet**	**201-400 feet**	**Total**
M-1	14	63	159	236
M-2	7	15	25	47
M-3	14	63	159	236

3.3.1.8 Biological Resources

The existing biological resources within the project area are described in Section 3.1.10. The following discusses the potential impacts to these resources. The distances measured adjacent to the existing rail line are miles totaled for both sides of the existing track.

3.3.1.8.1 Vegetation

Alternative M-1: No-Action

This alternative would have no additional impacts to vegetation other than those that occur in the existing rail corridor as part of normal rail line operation and maintenance.

Alternative M-2: Southern Bypass

Alternative M-2 would pass through approximately 2.8 miles of woody vegetation, and approximately 8.1 miles of agricultural land. Construction of this alternative would require the conversion of approximately 196.4 acres of agricultural land and approximately 67.8 acres of woody vegetation to railroad right-of-way. Approximately 24.0 acres of emergent wetland vegetation would be lost. Disturbance to the ground during construction, and revegetation of the proposed right-of-way upon completion of construction, would allow for the potential introduction of non-native and undesirable species of vegetation. Following completion of construction, the edge of the proposed rail right-of-way would be expected to revegetate as described in Section 3.2.10.1.

Alternative M-3: Existing Rail Corridor

The existing rail corridor in Mankato is adjacent to approximately 1.5 miles of pasture, approximately 5.0 miles of woody vegetation, and approximately 24.7 miles of cropland. Approximately 22.4 acres of emergent wetland vegetation and approximately 1.1 acres of forested wetlands would be lost through construction of this alternative. These vegetative communities could be impacted during the process of the reconstruction and operation of the existing rail line in ways similar to those described in Section 3.2.10.1. Potential impacts could include damage from construction equipment, loss due to herbicide use along the right-of-way, trimming and mowing, and ground disturbance. Following completion of construction, the edge of the proposed rail right-of-way would be expected to revegetate.

3.3.1.8.2 Wildlife

The types and species of wildlife found within each project area are described in Section 3.1.11. The following discusses the potential impacts to wildlife from the Mankato Alternatives.

Alternative M-1: No-Action

Under Alternative M-1, impacts to wildlife that inhabit the existing rail corridor would remain the same. The level of loss due to train collisions would not be expected to change. Disturbance from noise would continue at the current level. Wildlife which inhabit the project area are presumed to have adapted to the presence of rail traffic on the existing corridor and are not significantly affected by rail traffic noise. Additionally, much of this existing corridor, approximately 6.2 miles, is through developed areas that would tend to have only limited types and numbers of wildlife present.

Alternative M-2: Southern Bypass

The types of temporary impacts to wildlife created from construction and operation activities are described in Section 3.2.10.2. Wildlife within the Alternative M-2 project area could experience a loss of habitat. Approximately 264.2 acres of agricultural land, and approximately 67.8 acres of woody vegetation would be converted from their present land use to railroad right-of-way. Approximately 24.2 acres of emergent wetland habitat would be affected by the construction of Alternative M-2. Amphibian, reptile, and waterfowl species that use these areas would be displaced during construction and would need to find other suitable habitat. Birds that currently nest in trees and woody vegetation located within the proposed right-of-way would lose habitat through conversion of 67.8 acres of woodland to railroad right-of-way.

Wildlife would not only lose nesting, forage, and cover habitat, but would be presented with the obstacle of crossing a rail line where none previously existed. Loss of wildlife due to collisions with trains could increase, as suggested in Section 3.2.10.2.1, due to increased train speed frequency, for deer and other animals that may cross the proposed rail line or use it as a travel path. During operation, additional impacts to wildlife could include noise and mortality. Some species would abandon habitats in the surrounding area due to noise disturbance created by passing trains.

Alternative M-3: Existing Rail Corridor

Alternative M-3 utilizes an existing rail corridor. Therefore, the impacts to wildlife living within the project area would be similar to those previously described for rail line reconstruction in Section 3.2.10.2. Impacts associated with construction would most likely be temporary. Since a railroad is already present in the project area and has been in operation for many years, wildlife inhabiting the area have likely adapted. The increase in rail traffic and rail speed could require some adjustment for certain animals, but the impacts are not expected to be significant.

3.3.1.8.3 Aquatic Resources and Fisheries

Alternative M-1: No-Action

This alternative would cross 12 streams, including one crossing of the Blue Earth River. Alternative M-1 would not create additional impacts to aquatic resources or fisheries.

Alternative M-2: Southern Bypass

This alternative would cross one perennial stream, and nine intermittent streams. Impacts to aquatic resources would primarily result from construction of a stream crossing over the Blue Earth River. There are no trout streams identified within the proposed project area for Alternative M-2. Aquatic organisms inhabiting primarily the Blue Earth River could be affected during the construction phase of the proposed project, due to increased TSS and other potential pollutants as described in Section 3.2.10.3. The daily operations of the proposed rail line could create additional risk to aquatic life in the event of an accidental spill or derailment resulting in hazardous materials entering area waterways.

Alternative M-3: Existing Rail Corridor

The existing rail corridor through Mankato crosses 1 perennial stream and 11 intermittent or seasonal streams. No trout streams are crossed by Alternative M-3. The Blue Earth River, the perennial stream, is crossed west of Mankato. Potential impacts to aquatic organisms, such as alteration of available habitat and abrasion of gills due to increased sediment, are described in Section 3.2.10.3. Impacts from Alternative M-3 could include increased TSS and accidental chemical spills during construction and operation.

3.3.1.8.4 Threatened and Endangered Species

A list of threatened and endangered species potentially occurring within the Minnesota project area is provided in Section 3.2.10.4. No impacts to any threatened or endangered species are expected to occur as a result of the selection of any of the proposed alternatives for Mankato.

3.3.1.9 Transportation

Impacts to transportation resulting from the reconstruction or construction of any of the action alternatives would be similar to those described in Section 3.2.11. Potential impacts would include traffic delays for motorists and rail traffic, detours, and inconvenience for pedestrians and vehicles crossing the rail line.

To determine the potential impacts to transportation, SEA calculated potential changes in vehicle delay at crossings where average daily traffic (ADT) volumes are 5,000 or greater as discussed in Section 3.2.11. SEA concluded that the potential effect of increased train traffic for highways with ADT volumes below 5,000 would be experienced by very few drivers and the additional vehicular delay would be minimal. SEA analyzed the crossings for three proposed levels of operation; 20 MNT, 50 MNT and 100 MNT, and two train lengths; 6,400 feet (115 cars) and 7,400 feet (135 cars). SEA categorized crossings based on the level of service. Levels of service ranging from free-flowing (A) to severely congested (F) were quantified in Table 3.3-7 as follows:

Table 3.3-7 Grade Crossing Level of Service	
Level of Service	**Average Total Delay (sec/vehicle)**
A	≤5
B	>5 and ≤10
C	>10 and ≤20
D	>20 and ≤30
E	>30 and ≤45
F	>45

The results of SEA's transportation analysis are included under each alternative for the three levels of rail operation evaluated.

Alternative M-1: No-Action

Under Alternative M-1, no changes in the existing transportation environment would occur. Rail traffic would remain at the present level, as would operating speeds. Alternative M-1 does not have any crossings where the ADT is 5,000 or greater. Traffic delays at the 15 grade crossings (Appendix G, Table 3-MN-G45), along the existing rail line, would remain unchanged. Grade separated road crossings at Highway 14, Highway 60 and Bellgrade Avenue would not be upgraded. Operational conflicts between DM&E and UP would continue.

Alternative M-2: Southern Bypass

This alternative would create 19 new grade crossings, including 3 state highways, 5 county roads and highways, and 10 city, rural, and private roads. Traffic on these roadways could experience delays, reduced access, and inconvenience due to road closures and detours during construction. Emergency events would require establishment of routes that would avoid or minimize delay for emergency vehicles during construction activities or operating trains at crossings used for access across the new rail line. Pedestrian routes would also need to be modified. Grade separated road crossings at Highway 14, Highway 60 and Bellgrade Avenue would not be upgraded. Operational impacts would include traffic delays at these grade crossings during train passing events.

20 MNT

There would be two public grade crossings along Alternative M-2 with ADT's above 5,000. These would be the crossings of State Highway 22 and US 169. SEA performed vehicle delay calculations for these crossings and determined the level of service under the 20 MNT level of operation would be A for both train length scenarios.

50 MNT

Under the 50 MNT operation level, both public grade crossings analyzed, as identified under 20 MNT, would experience a level of service of A for the 6,400 feet train scenario and B for the 7,400 feet scenario.

100 MNT

Both public grade crossings analyzed, as identified under 20 MNT, would experience a B level of service for both train length scenarios at this level of operations.

Alternative M-3: Existing Rail Corridor

Alternative M-3 would cross 15 county roads, highways, and city streets at grade (Appendix G, Table 3-MN-G49). All roadways crossed could experience impacts related to reconstruction similar to those described in Section 3.2.11, such as traffic delays, reduced access and rerouted traffic. Following construction of a new rail line, all grade crossings between mileposts 131.0 and 136.8, which includes all crossings between 1st Avenue and Bird Avenue along the current UP rail line, would have a speed restriction of 40 mph. During operation, impacts to transportation would include delays to vehicles at grade crossings. While individual train events would result in shorter delays due to increased train speeds, the increased number of trains would result in an increased number of delays for motorists and pedestrians. Alternative M-3 would not have any crossings where the ADT is 5,000 or greater. SEA concluded that the potential effect of increased train traffic for highways with ADT volumes below 5,000 would be experienced by very few drivers and the additional vehicular delay would be minimal. Under Alternative M-3, the grade separated crossings of the rail corridor at Highway 14, Highway 60, and Belgrade Avenue would be upgraded, providing for improved traffic flow at these locations.

3.3.1.10 SAFETY

Impacts to safety from the reconstruction or construction of any of the action alternatives would be similar to those described in Section 3.2.12. Potential impacts would affect vehicle safety at grade crossings and pedestrian safety at designated crossings along the rail line, and train safety.

To determine the potential impacts to safety, SEA calculated the vehicle delays and accident frequency rates for crossings along the proposed action alternatives in Mankato. SEA concluded that the potential effects of increased train speeds and the change in vehicle delays would not significantly change the accident frequency rates for crossings along the proposed Mankato Alternatives. No crossings evaluated for the Mankato Alternatives would be below Category A, as described in Section 3.2.12. SEA found the predicted accident frequency rates to be below the criteria of significance.

Alternative M-1: No-Action

Safety issues related to construction, reconstruction, and increased rail operation would not be experienced as a result of this alternative. However, the condition of the existing DM&E system would continue to present potential risk during train operation. Lack of upgrades to the existing DM&E rail line potentially increase the threat of train derailments and accidents at grade crossings. Grade separated road crossings at Highway 14, Highway 60, and Bellgrade Avenue would not be upgraded. Operational conflicts with UP increase the potential for train accidents.

Alternative M-2: Southern Bypass

Alternative M-2 would be built in a predominantly rural area. Safety concerns during construction, including pedestrian access and the presence of large construction equipment, could occur along multi-use trails and roadways where crossed by this alignment. Traffic detours and closed roadcrossings due to construction would be temporary (limited to the several days required to construct the crossing) and limited to only the sites of crossing construction.

Proposed rail construction and operation could affect safety of motorists and school buses at proposed grade crossings. Impacts associated with school bus traffic at grade crossings are presented in Section 3.2.12. The number of school bus crossings at public grade crossings are presented in Table 3.3-8.

As described in Section 3.2.12, operational impacts to safety would tend to be concentrated at grade crossings. During operation of the rail line, traffic delays and increased safety concerns at proposed grade crossings could cause traffic congestion and unsafe conditions for motorists and pedestrians. Pedestrians inconvenienced by the location of grade crossings could cross at unprotected crossings, or unauthorized locations, or walk along the rail line right-of-way. Red Jacket and South Mankato multi-use trails cross the proposed rail line one time each, creating safety concerns for pedestrians and bicyclists using the path. Alternative M-2 would result in increased safety for both the DM&E and UP railroads by reducing operational conflicts and the number of trains passing through town. Construction of Alternative M-2 would route DM&E rail traffic away from the flood control projects in Mankato and LeHillier. Routing rail traffic away from the flood wall would reduce the risk of damage or weakening due to vibration or derailment.

SEA evaluated the potential effects of Alternative M-2 on grade crossing safety.[4] The method used to determine the potential for accidents at grade crossings is presented in Appendix H. The results of SEA's analysis for the new grade crossings associated with Alternative M-2 are provided below for each level of rail traffic evaluated.

20 MNT

SEA's safety analysis showed that for the 19 public highway/railroad grade crossings required for Alternative M-2, the predicted accident frequency at the 20 MNT level of operation would range from 0.011 to 0.075. This translates into a range of estimated annual accident frequency from one accident every 91 years to one accident every 13 years, respectively. SEA found these predicted rates to be below the criteria for significance (Section 3.2.12).

50 MNT

SEA's safety analysis showed that the predicted accident frequency at the 50 MNT level of operation would range from 0.015 to 0.078. This translates into a range of estimated annual accident frequency from one accident every 67 years to one accident every 13 years, respectively. SEA found these predicted rates to be below the criteria for significance.

[4] No siding layout was available for Alternative M-2. Therefore, all crossings were evaluated as being only one rail line for Alternative M-2.

100 MNT

SEA's safety analysis showed that the predicted accident frequency at the 100 MNT level of operation would range from 0.020 to 0.098. This translates into a range of estimated annual accident frequency from one accident every 50 years to one accident every 10 years, respectively. SEA found these predicted rates to be below the criteria for significance.

Alternative M-3: Existing Rail Corridor

Alternative M-3 crosses the Sakatah Singing Hills Trail, east of Mankato at Lime Siding. It would be within approximately 1,000 feet of a public school, approximately 1,500 feet of a hospital, approximately 480 feet of a church, and within 500 feet of 236 houses. This setting places a large number of persons and vehicles in proximity to the existing rail line. Impacts to pedestrians and motorists would be similar to those described in Alternative M-2. However, they would be greater in magnitude due to a greater number of persons living along the existing rail line. Delay times for motorists would be expected to improve over the current conditions due to increased train speeds and improved grade crossings due to construction of a new DM&E rail line parallel to the UP rail line through Mankato. However, the increased number and speed of trains would create more opportunity for accidents to occur, as described in Section 3.2.13. Alternative M-3 would provide increased rail safety to both DM&E and UP railroads by reducing operational conflicts between the two carriers and improving their track conditions. Improved track conditions would reduce the risk of derailments and hazardous material spills. Grade separated road crossings at Highway 14, Highway 60, and Bellgrade Avenue would not be upgraded. Safety issues concerning school buses using grade crossings are presented in Section 3.2.13.1. Sixteen grade crossings would be crossed by school buses multiple times each school day. Hubbell Street, which is crossed three times daily by school buses from the Mankato School District, could experience a significant increase in accident frequency at the new crossing. School bus traffic levels are presented in Table 3.3-8.

Table 3.3-8
School Bus Crossings for Mankato Alternatives

School District and Bus Service	Alternative	Street Name	Number of Crossings/Day
Palmer Bus Co.	M-3	3rd Avenue	3
Yeager Bus Service	M-2	County Road 27	3
	M-2	Township Road 450	3
	M-2	State Highway 83	3
	M-2	County Road 186	3
	M-2	County Road 41	6
	M-2	Township Road 167	3
	M-2	State Highway 22	3
	M-2	Township Road 447	3
	M-2	Hungry Hollow Road	3
	M-2	County Highway 4	6
	M-2	County Highway 18	6
	M-2	Township Road 190	6
	M-2	State Highway 88	7
	M-2	Le Hillier City Street	3
	M-2	US Highway 169	3
	M-3	3rd Avenue	2
	M-3	Owatonna Street	3
	M-3	Hubbell Street	3
Manski Bus Co.	M-3	CSAH 17	11
	M-3	Agency Street	3
	M-3	3rd Street	3
	M-3	CSAH 3	15
	M-3	CSAH 12	22
	M-3	Township Road 305	3
	M-3	Township Road 273	3
	M-3	3rd Avenue	10
	M-3	Pine Street	6
	M-3	Owatonna Street	8
	M-3	Hubbell Street	8
	M-3	Bird Avenue	2

Although soil evaluation and vibration tests are as yet incomplete, concern has been expressed about the safety of the floodwall projects in Mankato and LeHillier. Construction and operation of the DM&E rail line along the LeHillier and Mankato flood control projects could potentially result in failure of the levee or flood wall during a flood event. The results of such a failure would cause flooding of residential and commercial areas of LeHillier and Mankato. Once test results for the flood control projects are submitted, the COE and the City of Mankato will evaluate whether Alternative M-3 would have an impact on these flood control facilities.

SEA evaluated the potential effects of Alternative M-3 on grade crossing safety. The method used to determine the potential for accidents at grade crossings is presented in Appendix H. One of the factors influencing grade crossing safety is the number of tracks at a crossing. Because different siding layouts would be necessary under the different Extension Alternatives, grade crossings would be affected differently under each Extension Alternative. Impacts to grade crossing safety are therefore discussed by Extension Alternative.

20 MNT

SEA's safety analysis showed that for the 20 public highway/railroad grade crossings studied along Alternative M-3, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0005 to 0.041 (Alternatives B and C) and 0.0008 to 0.041 (Alternative D). This translates into a range of increase from one accident every 1,891 years to one accident every 25 years (Alternatives B and C) and one accident every 1,224 years to one accident every 25 years (Alternative D), respectively. SEA determined that the predicted increases in accident frequency resulting from the 20 MNT level of operation would be significant at DM&E's new crossing of Hubbell Street, adjacent to UP's existing grade crossing (UP FRA ID No. 193473K). This highway/rail grade crossing is classified as Catagory A. SEA found the predicted increases at the other locations to be below the criteria for significance.

An overall increase in accident frequency when considering all grade crossings along Alternative M-3 would occur due to operation of this alternative, resulting in a system-wide change in accident frequency along Alternative M-3 of 0.118 for Alternatives B and C and 0.137 for Alternative. D. This represents a predicted increase of one accident every nine years for Alternatives B and C and one accident every seven years for Alternative D.

50 MNT

SEA's safety analysis showed that the predicted increase in accident frequency for Alternative M-3 at the 50 MNT level of operation would range from 0.004 to 0.059 for all the Extension Alternatives. This translates into a range of increase from one accident every 231 years to one accident every 17 years, respectively. SEA determined that the predicted increases resulting from the proposed construction was significant at Hubbell Street crossing (UP FRA ID No. 193473K) and 3rd Avenue crossing (UP FRA ID No. 193459P). These highway/rail grade crossings are classified as Catagory A. SEA found the predicted increases at other locations to be below the criteria for significance.

An overall increase in accident frequency when considering all grade crossings along Alternative M-3 would occur due to operation of this alternative, resulting in a system-wide change in accident frequency along Alternative M-3 of 0.025. This represents a predicted increase of one accident every four years.

100 MNT

SEA's safety analysis showed that the predicted increases in accident frequency for Alternative M-3 at the 100 MNT level of operation would range from 0.007 to 0.079 for all the Extension Alternatives. This translates into a range of increase from one accident every 151 years to one accident every 13 years, respectively. SEA determined the predicted increases resulting from the proposed construction to be significant at Hubbell Street crossing (UP FRA ID No. 193473K) and 3rd Avenue crossing (UP FRA ID No. 193459P). These highway/rail grade crossings are classified as Catagory A. SEA found the predicted increases at the other locations to be below the criteria for significance.

An overall increase in accident frequency when considering all grade crossings along Alternative M-3 would occur due to operation of this alternative, resulting in a system-wide change in accident frequency along Alternative M-3 of 0.388 for Alternatives B and C and 0.407 Alternative D. This represents a predicted increase of one accident every three years for Alternatives B and C and one accident every two years for Alternative D.

3.3.1.11 Hazardous Materials

Transportation of Hazardous Materials

Alternative M-1: No-Action

This alternative would not result in an increase in the types or amounts of hazardous materials being transported by DM&E. The likelihood of an accident involving hazardous materials is low due to the minimal quantities of such materials transported. However, the poor condition of DM&E's track increases the chances of a derailment that could potentially release hazardous materials.

Alternative M-2: Southern Bypass

Neither the construction nor operation of this alternative would result in increased types or amounts of hazardous materials being transported by DM&E. As stated in Section 3.2.13, the construction of Alternative M-2 would likely further reduce the potential for an accident involving the release of hazardous substances by providing an improved, safer rail line. The likelihood of such an accident is low due to the minimal quantities of such materials transported.

Alternative M-3: Existing Rail Corridor

Neither the construction nor operation of this alternative would result in an increase in the types or amounts of hazardous materials being transported by DM&E. The reconstruction of the existing rail line, as stated in Section 3.2.13, combined with the construction of new rail line to avoid operating conflicts with UP, would likely reduce the potential for an accident involving the release of hazardous substances by providing an improved, safer rail line. The likelihood of such an accident is low due to the minimal quantities of such materials transported.

Hazardous Material Sites

Alternative M-1: No-Action

Alternative M-1 would not involve any reconstruction or construction activities. Therefore, this alternative would not have the potential to disturb hazardous material sites. No impacts to such sites, or from the potential disturbance of any of them, would occur.

Alternative M-2: Southern Bypass

As described in Section 3.2.13, hazardous material sites are places where releases of hazardous materials have been reported to local, state, or Federal authorities. In Blue Earth County, seven LUST sites (Table 3.1-17) and four ERNS sites (Table 3.1-18) were listed. If any of these sites are located within the proposed rail corridor for this alternative, appropriate action would be necessary to avoid disturbance of the site. During operation, no impacts should occur to existing hazardous material sites. There is the potential for railroad operations to result in new sites of contamination in the event of spills during derailments or improper handling of hazardous materials necessary for normal operations. However, this is unlikely due to the expected reduction in derailments and compliance with regulations regarding handling, storage, and disposal of hazardous materials.

Alternative M-3: Existing Rail Corridor

As described in Section 3.2.13, hazardous material sites are places where releases of hazardous materials have been reported to local, state, or Federal authorities. In Blue Earth County, seven LUST sites (Table 3.1-17) and four ERNS sites (Table 3.1-18) were listed. If any of these sites are located within the proposed rail corridor for this alternative, appropriate action would be necessary to avoid disturbance of the site. During operation, no impacts should occur to existing hazardous material sites. There is the potential for railroad operations to result in new sites of contamination in the event of spills during derailments or improper handling of hazardous materials necessary for normal operations. However, this is unlikely due to the expected reduction in derailments and compliance with regulations regarding handling, storage, and disposal of hazardous materials.

3.3.1.12 Energy Resources

Transportation of Energy Resources

Upgrade of the DM&E rail line would provide more cost-effective transportation for PRB coal. Energy resources provided by PRB coal would be available to the user at a more economical rate, higher reliability, and greater efficiency, as discussed in Section 3.2.14.

Utilization of Energy Resources

Construction of the proposed DM&E rail line would provide a more cost-effective use of energy resources. Shorter routes and improved rail conditions would improve the utilization of energy resources by enabling the mines to meet production projections as well as reducing diesel fuel consumption for transport of PRB coal. This would be a more economical use of diesel fuel, as described in Section 3.2.14.

3.3.1.13 Cultural Resources

Alternative M-1: No-Action

No construction or change in the rail corridor would result from this alternative. No impacts would occur to any of the cultural resource sites listed along this section of the rail line.

Alternative M-2: Southern Bypass

The site files at the Minnesota State Historic Society were searched for Alternative M-2. Twenty sites and two site leads were identified within one mile of the proposed alignment (Table 3.3-9). Five of these sites are considered eligible for listing on the National Register of Historic Places (NRHP) and could be affected by construction of the project. Two sites, 21BE0110 and 21BEbj, which are as yet unevaluated, are located within the proposed rail line right-of-way. An explanation of the possible impacts to these and known and unknown potential prehistoric resources is found in Section 3.2.15.

Table 3.3-9
Known Archaeological Sites and "Site Leads"
Mankato - Alternative M-2

Site #	Type	Prehistoric/Historic	NRHP Status
21BE0007	Mound	Prehistoric	Unevaluated
21BE0008	Mound	Unknown	Unevaluated
21BE0020	Artifact Scatter	Prehistoric/Historic	Unevaluated
21BE0021	Campsite	Prehistoric	Unevaluated
21BE0022	Habitation	Prehistoric	Unevaluated
21BE0025	Habitation/Mounds	Prehistoric	Eligible
21BE0026	Artifact Scatter	Prehistoric	Unevaluated
21BE0054	Artifact Scatter	Prehistoric	Unevaluated
21BE0063	Lithic Scatter	Prehistoric	Unevaluated
21BE0107	Artifact Scatter	Prehistoric	Unevaluated
21BE0108	Artifact Scatter	Prehistoric	Unevaluated
21BE0110	Artifact Scatter	Prehistoric	Unevaluated
21BE0111	Artifact Scatter	Prehistoric	Eligible
21BE0112	Lithic Scatter	Prehistoric	Eligible
21BE0113	Artifact Scatter	Prehistoric	Eligible

Table 3.3-9 Known Archaeological Sites and "Site Leads" Mankato - Alternative M-2			
Site #	**Type**	**Prehistoric/Historic**	**NRHP Status**
21BE0125	Unknown	Unknown	Unevaluated
21BE0137	Artifact Scatter	Prehistoric	Eligible
21BE0155	Unknown	Unknown	Unevaluated
21BE0157	Lithic Scatter	Prehistoric	Unevaluated
21BE0262	Unknown	Unknown	Unevaluated
21BEbj	Site Lead	---	Unevaluated
21BEn	Site Lead	---	Unevaluated

Alternative M-3: Existing Corridor

A complete evaluation of the cultural resources that exist within and near the existing DM&E and UP rights-of-way in Minnesota is found in Section 3.2.15. Fourteen archaeological sites have been identified in or immediately adjacent to the railroad right-of-way along Alternative M-3. The list of potential cultural resources within the existing right-of-way includes structures associated with the railroad such as stone arches, depots, and the railroad itself. No historically significant structures were identified along this alternative in the site file search. An explanation of possible impacts to these and other potential prehistoric resources is found in Section 3.2.15. None of the structures within the existing right-of-way are expected to be removed as a result of this alternative. All sites are either associated with the railroad or were constructed in the context of an operating railroad. Therefore, no impacts to these structures are expected due to this project.

3.3.1.14 Socioeconomics

Alternative M-1: No-Action

There would be no change in the social or economic characteristics of the area from this alternative. No new jobs would be created and tax revenues would remain the same.

Alternative M-2: Southern Bypass

The population and demographics for Minnesota are presented in Section 3.2.16.1. Within Blue Earth County, the unemployment rate was reported at 2.9 percent in 1994. Construction activities along the DM&E rail line would create 85 two-year jobs directly associated with the railroad and an estimated 48 jobs indirectly associated with the railroad (Table 3.2-26). Local and non-local workers could be hired to fill positions with the railroad. Economic and employment benefits, such as purchase of construction materials from local suppliers and use of local lodging and eating facilities, are described in Section 3.2.16.2. Income from railroad construction work would total an estimated $13.8 million. This would generate an estimated $3.2 million in sales and use taxes (Table 3.2-28). Non-local construction workers would not likely relocate permanently to this community. However, the community would benefit from the income spent by these workers while located in the area. Construction of the proposed rail corridor would provide a second rail carrier to the Mankato area. Dual rail carriers providing competitive, efficient rail service could make the area attractive to new business, increasing economic opportunities in the city, county, and region. Population increases could result due to permanent jobs provided by the railroad and new industries in the project area. Additional workers moving to the area to obtain permanent jobs would increase the demand for housing. Land values may increase along Alternative M-2 if this land is attractive to commercial or industrial developers. Property taxes paid to the county by DM&E could increase to an estimated $1.4 million (Table 3.2-25).

Alternative M-3: Existing Rail Corridor

Since this information is based on the county in which these alternatives are located, the information for socioeconomics would be basically the same as that presented for Alternative M-2.

3.3.1.15 Environmental Justice

The City of Mankato submitted demographic information for the city as well as an extensive study that addresses housing affordability and availability in Mankato.[5] SEA has reviewed this information and the conclusions of the city that environmental justice communities would be affected by the proposed project. SEA's analysis also identified potential concerns for environmental justice communities. The result of SEA's analysis are pesented for each alternative in this section.

[5] Ibid.

Alternative M-1: No-Action

Alternative M-1 would involve continuation of the status quo for rail operations in Mankato. This would involve use by DM&E and UP of the existing rail corridor through Mankato owned and operated by UP. UP's existing rail line crosses one census block group determined by SEA to meet the criteria for environmental justice. This census block group is classified as environmental justice due to having a percentage of persons in the census block group at or below the poverty level that was 10 percent or more than the percentage for Blue Earth County. No additional impacts would be expected to occur to these communities under Alternative M-1.

Alternative M-2: Southern Bypass

Alternative M-2 would cross one census block group determined by SEA to meet the criteria for environmental justice. This census block group is classified as environmental justice due to having a percentage of persons in the census block group at or below the poverty level that was 10 percent or more than the percentage for Blue Earth County.

SEA evaluated the impacts of the proposed construction of a new rail line and level of rail traffic to this environmental justice census block group and compared these impacts to the impacts expected to the non-environmental justice census block groups (Appendix D). SEA's analysis determined that no disproportionate impacts would occur to the environmental justice census block group.

Alternative M-3: Existing Rail Corridor

Alternative M-3 would cross six census block groups determined by SEA to meet the criteria for environmental justice. Five of these census block groups are classified as environmental justice due to having a percentage of persons in the census block group at or below the poverty level 10 percent or more than the percentage for Blue Earth County. The one remaining census block group is classified as environmental justice due to having a percentage of minorities 10 percent higher than the overall percentage of minorities for Blue Earth County.

SEA evaluated the impacts of the proposed construction of a new rail line and level of rail traffic to these environmental justice census block groups and compared these impacts to the impacts expected to the non-environmental justice census block groups (Appendix D). SEA's analysis determined that one low income census block group would experience disproportionate impacts due to increased noise. Disproportionate impacts would occur at the 100 MNT level of rail operations.

3.3.1.16 Recreation

M-1: No-Action

Impacts to recreation, primarily due to disturbance during rail operations, as a result of this alternative, would remain at their current levels. Access to public facilities would remain the same.

Alternative M-2: Southern Bypass

Alternative M-2 would cross the Red Jacket Trail and the proposed South Mankato trail southwest of Mankato. The Sakatah Singing Hills trail would be crossed near Lime Siding. These trails are part of a network of hiking and biking trails found in and around the City of Mankato. Additionally, the City of Mankato has plans for future trails and sidewalks in the project area which would require crossing the proposed rail line approximately six additional times.[6] During construction, trail users would potentially be delayed and detoured at closed rail crossings. Potential impacts, similar to those presented in Section 3.2.17, could include increased noise, increased human activity, fugitive dust, reduced visitor access and increased traffic during construction and operation. These impacts would detract from the overall solitude of recreational areas, reducing enjoyment of the recreational experience. However, this would only be expected to occur in the vicinity of rail crossings. Reduced safety for pedestrians and bicyclists using these trails could result from trail users trying to avoid construction areas and closed crossings by walking along the proposed rail line right-of-way to cross in unsafe or unauthorized areas. Operational impacts could include increased noise from passing locomotives and safety concerns associated with trail crossing of the proposed rail line.

Mount Kato, one of Minnesota's premier down hill ski and mountain biking areas is located within 0.5 mile of Alternative M-2. The proposed route would not run directly through the ski area, but would be near enough that noise, reduced visitor access and visual detraction could be potential impacts during construction and operation.

There are currently plans for the construction of a private campground and resort in the valley to the west of Mount Kato. The proposed route for Alternative M-2 would cross the property where the resort is to be built. Construction and operation of Alternative M-2 could cause the resort developers to select a new location or cancel the project due to the noise disturbance, access, and safety issues that could be caused by a nearby rail line.

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[6] Based on information provided by the City of Mankato, and verbal information obtained during telephone conversations with an employee of the City of Mankato

A wide variety of recreational opportunities are available in the project area. Many of these opportunities, such as hunting, fishing, camping, snowmobiling, and hiking are not restricted to the immediate vicinity of the proposed rail line. Participants in these activities could select other areas away from the proposed rail line, resulting in longer transit times and greater inconvenience. However, over all, only a small number of individuals currently using areas in proximity to Alternative M-2 would be affected. The presence of a railroad could diminish attractiveness of the area for recreational use and future recreational development resulting in a loss of both tax dollars and tourism revenue.

Alternative M-3: Existing Rail Corridor

The existing railroad corridor, in which Alternative M-3 would be constructed, passes adjacent to Sibley Park on the west side of Mankato. Sibley Park is a historic park, and has been an important recreational resource for the citizens of Mankato for decades. The park offers areas for organized sports, picnicking, and sledding. During construction of Alternative M-3, disturbance from noise would detract from the quiet park setting. Potential traffic delays and reduced access could occur to park patrons from construction and increased rail traffic, as well as safety concerns for pedestrians walking to, from, and within the park.

The City of Mankato, Blue Earth County, and the State of Minnesota maintain paved bicycle and walking trails in and near Mankato. According to officials at the City of Mankato, the trail system attracts an abundance of users and is a valuable recreational resource for the citizens of Mankato and surrounding areas. The City of Mankato is currently in the process of developing their trail and sidewalk system in town, including connections to join several of their trails with those maintained by the State and County, to form a continuous 50-mile trail corridor. Alternative M-3 would cross at least three of the trails in this system a total of five times. Construction and operational impacts would be similar to those described in Section 3.2.17, including noise, loss of solitude, and safety issues at crossings. Proposed construction of a new pedestrian/bike ramp to connect the Minnesota River Trail and the Belgrade/Mulberry Bridge walkway, a pedestrian underpass on Hubble Avenue, and a pedestrian/bike bridge over the Blue Earth River would provide safer access for pedestrians using these locations.

The Mankato Mashers, of the Northwoods Baseball League, play their home games in Mankato. Each team in the league plays 32 home games during the summer season. The stadium where the Mashers play is not near any of the Mankato Alternatives, therefore no impacts from construction and operation of the DM&E rail line would be expected.

3.3.1.17 Aesthetics

3.3.1.17.1 Impacts to Wild and Scenic Rivers

There are no wild and scenic rivers within the area described for the reconstruction project or the new build project. None would be impacted by any of the proposed alternatives.

Alternative M-1: No-Action

Alternative M-1 would have no impact on the scenic value of the project area. However, the presence of a deteriorating rail line could contribute to the perception of the area as unkept and dilapidated.

Alternative M-2: Southern Bypass

Impacts to the scenic value of the project area are difficult to quantify. Since there are no railroads currently in the project area, the scenery would change if Alternative M-2 would be constructed. The construction process would likely create a temporary detraction from the existing landscape by clearing vegetation and earth disturbance. The operation of the alternative would forever change the composition of the surrounding countryside by the addition of a visible linear corridor. However, visual impacts are not necessarily negative. There are numerous clubs and organizations dedicated to the hobby of train watching. What may be perceived as a visual detraction to some could in fact be desirable to others. In addition, numerous roadways cris-cross the project area. Alternative M-2 would add another such corridor. While no established scenic areas would be impacted, the relatively undeveloped Le Sueur and Blue Earth River valleys and surrounding farmlands present a scenic value. This would be diminished by construction and operation of Alternative M-2. However, Alternative M-2 would be in proximity to the Mankato South Route through the Le Sueur valley. The presence of the highway would reduce the visual impact of the proposed rail line through the area, as a rail line would generally be consistent with these existing linear corridors.

Alternative M-3: Existing Rail Corridor

The source of visual detraction created during the construction portion of the project would largely be limited to the proposed right-of-way and would include ground and vegetation disturbance, removal of vegetation and the presence of heavy equipment. The visual impacts created during construction would also reach beyond the proposed rail line right-of-way and likely be noticed from adjacent areas, such as residences, trails and parks along the rail line. Operational impacts to scenic values would result from the installation of a new rail line, bridges, and culverts.

These structures are likely to be more noticeable due to the lack of weathering. However, the reconstructed rail line and the presence of rail traffic would be consistent with the current visual nature of the area of this alternative. Alternative M-3 would also result in an upgrade of the existing rail corridor and existing DM&E rail line. The clean-up of the area and installation of new rail material would help to improve the visual nature of the area from one of a dilapidated, industrial corridor.

Summary

The following, Table 3.3-10, provides a summary of the potential impacts of each of the evaluated Mankato Alternatives.

Table 3.3-10
Mankato Alternative Impact Summary

Feature	Alternative		
	M-1	M-2	M-3
LENGTH OF ROUTE IN MILES	18.0	13.3	18.0
MILES OF REBUILD	0	0	O
MILES OF NEW CONSTRUCTION	0	13.3	18.0
PRIME FARMLAND			
Acres Converted to Rail Right-Of-Way	0.0	96.0	0.0
LINEAR LAND USE			
Agricultural			
Linear Miles Adjacent To	15.2	18.3	15.2
Acres Converted To Right-of-way	0.0	222.0	0.0
Residential			
Linear Miles Adjacent To	0.8	0.9	0.8
Acres Converted to Right-of-way	0.0	10.9	0.0
Business and Industrial			
Linear Miles Adjacent To	5.4	0.2	5.4
Acres Converted to Right-of-way	0.0	2.4	0.0
Public Lands			
Linear Miles Adjacent To	0.9	0.0	0.9
Acres Converted to Right-of-way	0.0	0.0	0.0

Table 3.3-10
Mankato Alternative Impact Summary

Feature	Alternative		
	M-1	M-2	M-3
WATER RESOURCES			
Stream Crossings			
Perennial	1.0	1.0	1.0
Intermittent	11.0	9.0	11.0
Wetlands			
Acres Within Right-Of-Way	23.5	24.0	23.5
BIOLOGICAL RESOURCES			
Pasture			
Linear Miles Adjacent to Rail Line	6.8	0.0	6.8
Acres Converted to Right-of-way	0.0	0.0	0.0
Woodlands			
Linear Miles Adjacent to Rail Line	11.2	5.2	11.2
Acres Converted to Right-of-way	0.0	63.0	0.0
Cropland			
Linear Miles Adjacent to Rail Line	8.4	18.3	8.4
Acres Converted to Right-of-way	0.0	222.0	0.0
TOTAL GRADE CROSSINGS			
U.S. Highways	0.0	1.0	0.0
State Highways	0.0	3.0	0.0
County, City and Other	19.0	13.0	19.0
DISTANCE TO NEAREST CHURCH	480 Feet	3,800 Feet	480 Feet
DISTANCE TO NEAREST HOSPITAL	1,500 Feet	16,500 Feet	1,500 Feet
DISTANCE TO NEAREST SCHOOL	1,000 Feet	5,500 Feet	1,000 Feet
SCHOOL BUS CROSSINGS PER DAY	105	61	105
HOMES WITHIN 500 FEET	229	60	229
HOMES RELOCATED	0	8	0
HOMES WITHIN 100 FEET	14	7	14
MAXIMUM NOISE RECEPTORS 65/70 dBA L_{dn}	826/293	434/177	2,507/1,071

3.3.2 ROCHESTER BYPASS

In its proposal to the Board, the City of Rochester, Minnesota submitted plans for a rail bypass route south of the city as an alternative to reconstructing the existing DM&E rail line through town. Rochester proposed this bypass to eliminate what it believed would be detrimental impacts to the comunity. Rochester believed these impacts would occur in the areas of noise, vibration, movement of emergency vehicles, grade crossing safety, and traffic flow. This section will compare the potential impacts that would be expected from each of the proposed alternatives. Potential impacts discussed in this section are only those anticipated to occur to the approximately 23.3 mile portion of the existing rail line which corresponds to the the approximately 34.1 mile bypass route proposed by the city of Rochester. The proposed alternatives include the following:

Alternative R-1: No Action Alternative

The No-Action Alternative would be the denial by the Board of granting DM&E the authority to construct and operate a rail line extension into the PRB. Under this alternative, DM&E would continue to operate their existing rail line as present on the approximately 23.3 miles of track through Rochester. None of the impacts associated with rebuilding the existing rail line or operating with increased numbers would occur. None of the benefits of having access to a modern rail facility would be experienced.

Alternative R-2: Reconstruction of existing rail line

This alternative would be DM&E rebuilding their approximately 23.3 miles of existing rail line through Rochester making it capable of supporting heavy coal traffic. All train traffic, existing and future, would use the existing rail line.

Alternative R-3: Approval of bypass for coal traffic

Under Alternative R-3 the bypass would be constructed. However, only future coal traffic would use the bypass. All existing traffic (three trains a day) would continue to use the existing rail line through town as it currently exists. No reconstruction of the existing rail line would occur. Impacts created by this alternative would include those resulting from the construction and operation of an approximately 34.1 mile long bypass route south of Rochester combined with the impacts that currently exist on the existing rail line.

Alternative R-4: Approval of bypass for all rail traffic

Construction of this alternative would bypass the existing rail line through town with a new rail line south of Rochester, Minnesota. The bypass would involve the construction and operation of approximately 34.1 miles of new rail line. Impacts resulting from this alternative would reflect the conversion of land to railroad right-of-way. All DM&E rail traffic, existing and future, would use this bypass route.

Based on the DM&E siding plan, SEA determined that one siding location is proposed for the existing rail segment of Alternatives R-2 and R-3. The following discusses the potential impacts of the Rochester bypass alternatives by environmental resource.

3.3.2.1 Climate

No impacts to the climate within the Rochester area would occur as a result of the construction and operation of any of the Rochester alternatives.

3.3.2.2 Topography

Alternative R-1: No Action Alternative

The topography of the project area was changed when the existing rail line was constructed over 100 years ago. There are locations west of Rochester, near Byron, where cuts were likely required to maintain a suitable grade at the time the original railroad was constructed. However, because this alternative would require no reconstruction or change in operations, no impacts would occur to the topography of the project area.

Alternative R-2: Reconstruction of existing rail line

The topography of the Alternative R-2 alignment likely experienced changes during the original construction of the existing rail line. A description of these alterations are presented in Section 3.2.4 , and include cut and fill operations to achieve proper grade. The reconstruction of the existing rail line could require additional raising or lowering of the rail bed to maintain the desired operating grade. However, significant changes to the topography are not anticipated as a result of this alternative.

Alternative R-3: Approval of bypass for coal traffic

Construction of this alternative would likely require changes in the topography of the project area. The proposed route for Alternative R-3 would require it to cross rather than follow the contour of the land. Where hills and valleys would be crossed, cut and fill operations would be necessary to establish a suitable operating grade. This alternative would cross 28 intermittent streams and 8 perennial streams, including Salem Creek. Stabilization of stream banks in areas where the rail line crosses existing streams would be required.

Continuing to route the existing rail traffic over the existing rail line would have no further impact on the topography of the project area.

Alternative R-4: Approval of bypass for all rail traffic

Construction and operation of Alternative R-4 could require alternations to the topography of the project area as discussed for Alternative R-3.

3.3.2.3 Geology and Soils

3.3.2.3.1 Geological Hazards

Alternative R-1: No Action Alternative

No geological hazards are known to be present on the existing rail line. No impact from geological hazards would be expected.

Alternative R-2: Reconstruction of existing rail line

As mentioned above, no geological hazards are known to be present along the existing rail line. Therefore, impacts resulting from geological hazards would not be expected to occur from the reconstruction or operation of this alternative.

Alternative R-3: Approval of bypass for coal traffic

Geological conditions of possible significance are known to be present along Alternative R-3. Based on information from the Minnesota Geological Survey and the University of Minnesota, the alignment of Alternative R-3 would pass through a region of karst topography with a high probability for sink holes. Karst topography is characterized by caves and sinkholes created from the movement of underground water dissolving limestone bedrock. Potential environmental problems associated with construction in karst terrains could include the gradual or catastrophic opening of a sink hole due to heavy construction activities. Earth moving activity and the weight of construction equipment could result in collapse of underground caverns. Potential damage to equipment and injury to workers would occur if a sinkhole would open during construction operations.

During operation, the weight of trains and vibration could result in the opening or collapse of sinkholes. If a sinkhole should open during the operation of the alternative, either gradually or catastrophically, any structures built above it would likely be damaged or destroyed. Derailment of operating trains would likely result. Ground water contamination is a potential environmental problem in areas with sink holes and karst topography. In the unlikely event of a chemical spill, pollutants could readily enter ground water resources through sinkholes and open areas in the bedrock. Contaminants entering the ground water could cause far reaching impacts to the health and quality of life to people and other living things that depend on the aquifer for water.

As stated above for Alternative R-1, no known geological hazards are known to exist on the portion of Alternative R-3 that utilizes the existing rail line. No impacts would be expected to result from this portion of the alternative.

Alternative R-4: Approval of bypass for all traffic

The alignment of Alternative R-4 would cross locations of geological concern as discussed for Alternative R-3. Alternative R-4 would have impacts to geological hazards similar to the new construcion portion of Alternative R-3. Construction and operation of a bypass in an area of karst topography such as that described above could result in significant impacts.

3.3.2.3.2 Soil Impacts

Alternative R-1: No Action Alternative

Potential soil impacts associated with the reconstruction of the existing rail line, as described in Section 3.2.5.3, would not be experienced with this alternative. Operational impacts would be limited to soil contamination from a chemical spill, an unlikely occurrence at the present level of risk, and any minor disturbances resulting from general maintenance of the existing track. No prime farmland would be affected by this alternative.

Alternative R-2: Reconstruction of existing rail line

The reconstruction and operation of the existing rail line has the potential to disturb the soil in a manner similar to what is described in Section 3.2.5.3. Reconstruction activities would disturb approximately 564.8 acres of soil in the existing DM&E right-of-way. Reconstruction impacts would include compaction of soil, erosion, and mixing of soils. Operational impacts would generally be associated with accidental spills and minor disturbances created during routine maintenance of the rail line and would likely be confined to the existing right-of-way. Construction of this alternative would not result in the loss of any prime farmland. The land within the existing right-of-way is no longer available for agricultural production therefore it can no longer be considered prime farmland.

Alternative R-3: Approval of bypass for coal traffic

Soils located along the Alternative R-3 alignment vary in composition. They consist of silty, sandy, and loamy soils and loess soils with underlying glacial till. These soils exhibit varying degrees of drainage and susceptibility to erosion. There are five main soil associations found along the bypass portion of this alternative. The Readlyn-Maxifield-Kenyon association is nearly level to gently sloping, well drained to poorly drained, loamy, silty soils. The Racine-Floyd-Maxfield association is level to nearly level, well drained to poorly drained, silty upland soils. The Rockton-Channahon-Atkinson association is nearly level, well drained upland loamy soils. The Mt. Carroll-Otter-Joy association is nearly level to moderately steep, well drained to poorly drained, silty upland soils. The Waukee-Radford-Spillville association is nearly level to gently sloping, well drained to poorly drained, silty soils of floodplains and outwash terraces. Most of these soils are moderately to slightly susceptible to wind and water erosion.

According to United States Department of Agriculture (USDA) soil survey information for the area of Alternative R-3, much of the soil types within the proposed right-of-way contain severe limitations for development of buildings and roadways. Factors in the soil characteristics such as low strength, wetness, and frost action could make construction of a railroad in this region difficult.

Construction of Alternative R-3 would cause changes to the soil within the proposed right-of- way. Removal of vegetative ground cover and top soil could increase the loss of soil from erosion. Heavy equipment working within the right-of-way would cause compaction of the soil. Compacted soil is less absorbent which creates increased storm water run-off. Compacted soil is generally less productive for plant growth. The process of cutting high areas and filling low areas would cause soil profiles to become mixed. This would change the physical characteristics of the soil and potentially render it less productive. Construction activities would largely be confined within the right-of-way, however soils outside the right of way would experience similar disturbance when used for construction access, service roads, and soil borrow areas. Upon completion of construction activities the right-of-way would be re-vegetated by seeding and encroachment from vegetation outside the right-of-way. Reestablished vegetative cover in the right-of-way would aid in preventing post-construction erosion.

Potential impacts to the soil during operation of this alternative would include train derailments resulting in spilled chemicals and disturbance to soil from rail maintenance. Chemical spills would require containment and rapid clean-up to minimize the potential damage to the soil. In locations with karst topography, accidental spills could introduce chemicals into the ground water as described in Section 3.2.7.3. A train derailment would be considered an uncommon event, therefore the potential for impacts resulting from such an event would be considered unlikely. Additionally, impacts resulting from maintenance of the right-of-way would be isolated and confined within the right-of-way and would not be expected to be significant.

As described above in Alternative R-1, the portion of the alterative that involves the No-Action Alternative would not create any additional impacts to the soils of the project area

Approximately 606 acres of prime farmland would be converted to railroad right-of-way by the construction of the bypass route. This land would be permanently removed from potential crop production. The proposed bypass project area is largely rural, with highly productive agricultural soils.

Alternative R-4: Approval of bypass for all traffic

The construction Alternative R-4 has the potential to create impacts to soils the same as those described for the new construction bypass portion of Alternative R-3. Approximately 606 acres of prime farmland would be lost as a result of this alternative.

3.3.2.3.3 Paleontological Resources

Paleontological resources may occur scattered throughout the Rochester project area. Any paleontological resources that could have been present within the existing corridor would likely have been destroyed during the original construction of rail facilities within the rail corridor. It is unlikely that the limited earth work involved in reconstruction of the existing rail line will have an adverse impact on paleontological resources. The possibility of discovering paleontonlogical resources while constructing a bypass does exist, particularly in areas where major excavation would be required, such as for the crossing of Salem Creek. However, discovery of significant paleontological resources, such as vertebrate fossils, are considered unlikely in this area.

3.3.2.4 Land Use

The potential changes to land use due to the reconstruction of a portion of the existing DM&E rail line and the construction of a bypass corresponding to this portion are evaluated in this section. The land use types evaluated include agricultural, residential, business and industry, and public lands. Land use types have been determined using aerial photographs. Land use along both sides of the track was measured. Land used for roadways and distances to cross rivers and streams was not included in the total. Therefore, the cumulative lengths of these land use types may not add up to twice the total length of the alternative.

3.3.2.4.1 Agriculture

Alternative R-1: No-Action Alternative

The existing rail line through Rochester is adjacent to approximately 7.9 miles of agriculture land. Because this alternative would not require any construction or reconstruction activity or change in rail operations, no impacts to agricultural land are anticipated from this alternative.

Alternative R-2: Reconstruction of existing rail line

Alternative R-2 would be adjacent to approximately 7.9 miles of agricultural land. Potential impacts to agricultural land during reconstruction activities are similar to those described in Section 3.2.6.1, and include soil compaction and crop damage from construction equipment, as well as loss of crops where planting has occurred within the railroad right-of-way.

Potential operational impacts could include crop loss or damage from herbicides used to control right-of-way vegetation. In the unlikely event of a derailment, crops and agricultural land could experience damage. However, access to a modern rail line could have a positive affect on agricultural business by providing an efficient means of shipping agricultural products to market.

Alternative R-3: Approval of bypass for coal traffic

Alternative R-3 would be adjacent to approximately 60.0 miles of agriculture land which would result in approximately 727.3 acres of agricultural land, including 606.0 acres of prime farmland, being converted to railroad right-of-way. Farmers would no longer have the farm revenue generated from the use of these acres. Potential impacts during construction could include soil mixing and compaction, crop damage, and erosion. In an area where agricultural land is decreasing due to urban encroachment, construction of this alternative represents a substantial loss of a valuable resource and a long term impact.

During construction and operation of Alternative R-3, area farmers could be affected by reduced access to fields and safety concerns. The proposed rail line would cross numerous agricultural fields, resulting in portions of those fields being located on opposite sides of the rail line from the farmers' headquarters. Access to these areas would be limited to existing roads or, if installed, equipment crossings of the proposed rail line. During construction, noise, and dust generated from earth moving activities will be present during construction, but would likely decrease during railroad operation.

During operation of the proposed alternative, farmers would be required to either drive equipment on local roads, crossing the proposed rail line at public grade crossings to access fields, or cross the proposed rail line at unprotected private crossings. Under both scenarios, farmers would experience increased inconvenience and reduced safety. Farmers would be required to cross railroad tracks at unprotected crossings to move equipment or travel on roadways with large, slow moving farm machinery which could create a safety hazard to themselves, motorists traveling on the same roadways, and operating trains and their crews. In some cases, the size of the field on one side of the proposed rail line could be too small to economically continue to farm. These lands could be sold to adjacent farmers and consolidated with other existing fields, or taken out of production and left fallow. Removal from production would decrease the available land and production of these farms, ultimately reducing farm income.

The portion of Alternative R-3 that utilizes the existing DM&E rail line would create no further impacts to the agricultural land in the project area.

Alternative R-4: Approval of bypass for all rail traffic

Construction and operation of Alternative R-4 would create impacts the same as those described above for the new construction portion of Alternative R-3.

3.3.2.4.2 Residential

Alternative R-1: No-Action Alternative

The existing rail line is adjacent to approximately 1.7 miles of residential land. This alternative would not result in any new impacts to residential land associated with reconstruction or increased operation levels. Existing impacts to residential land include primarily noise and vibration resulting from train operation. These impacts are provided in Tables 3.3-14 and 3.3-18.

Alternative R-2: Reconstruction of existing rail line

Approximately 1.7 miles of residential land would be adjacent to this proposed alternative. Potential impacts to residential land resulting from the reconstruction of the existing rail line would be similar to those described in Section 3.2.6.2. These impacts would include increased noise during working hours (Section 3.3.2.7), fugitive dust (Section 3.3.2.6), safety concerns (Section 3.3.2.10), and traffic delays (Section 3.3.2.9). Potential operational impacts would be similar to those mentioned for construction, including increased noise, safety concerns, traffic delays, as well as the general inconvenience of having a railroad near homes. Disturbances created by the operation of a railroad would be a more frequent occurrence than currently experienced, particularly to those living very near the rail line and railroad crossings.

Alternative R-3: Approval of bypass for coal traffic

Residential land would not occur within the proposed bypass right-of-way. However, there would be 7 houses within 500 feet of Alternative R-3. The construction of the proposed bypass could cause temporary inconveniences to nearby residents in the form of re-routed vehicular traffic and traffic delays while grade crossings are constructed, increased noise and dust from earth moving activities, emissions generated by construction equipment, and safety concerns from the presence of heavy equipment. During operation of the proposed bypass, nearby residents along the proposed bypass could expect to experience an increase in noise, delays at road crossings, and the general inconvenience of having a railroad near their homes. The serenity of the rural lifestyle that is currently enjoyed by those living in the area of the proposed bypass could be altered as a result of the construction and operation of the bypass due to increased noise disturbance.

The portion of Alternative R-3 which would utilize the existing rail line under current rail traffic would not result in a change in impacts to residential land above those currently occuring (Tables 3.3-16 and 3.3-18).

Alternative R-4: Approval of bypass for all traffic

The impacts to residential land that would result from the construction of this alternative would be the same as those described above for the new construction bypass portion of Alternative R-3.

3.3.2.4.3 Business and Industrial

Alternative R-1: No-Action Alternative

There is approximately 5.9 miles of business and industrial land adjacent to the existing DM&E rail line through Rochester. This alternative would result in business and industry along the existing rail line continuing to experience the same level of operational impacts associated with the current DM&E service in Rochester. Potential impacts associated with the reconstruction and operation of rehabilitated rail line would not be experienced with this alternative. Likewise, none of the benefits of having access to efficient railroad service would be experienced by the existing rail shippers in Rochester.

Alternative R-2: Reconstruction of existing rail line

There is approximately 5.9 miles of business and industrial land adjacent to the existing rail line. These businesses may experience temporary periods of inconvenience while the existing rail line is being reconstructed, particularly those close to the tracks or using DM&E rail transportation service. General impacts anticipated to occur to businesses would be similar to those described in Section 3.2.6.3.

Operation of a rebuilt DM&E rail line would provide improved rail services to Rochester rail shippers as explained in Section 3.2.6.3. Existing businesses not currently utilizing rail transportation may be enticed to convert some of their transportation need from truck to rail. Existing shippers (Rochester Public Utilities, Seneca Foods Corp., Rochester Iron & Metal, Tamarack Materials, Inc., General Warehouse, TexPar Energy, Inc., United Building Center, Public Delivery Track, and Argo Distribution in Byron) would receive improved service, potentially making them more efficient, competitive, and profitable. Improved rail service could attract new industries and business to the Rochester area which would provide growth to the local economy.

Businesses and industries located near the existing DM&E rail line could experience periods of inconvenience during operation of the rail line. Industrial operations that use potentially sensitive equipment such as Pemstar, have expressed concern over the potential affects of ground vibrations (Section 3.2.9.1) on their operation. Pemstar designs and builds precision automation and test systems for the disk drive, medical, and telecom industries. Pemstar currently experiences disruptions from DM&E rail traffic. However, due to the infrequent passing of trains, Pemstar is able to operate under the current conditions. Based on projected increases in rail traffic on the DM&E rail line, Pemstar anticipates they would not be able to continue operations at their current facility which is approximately 150 feet from the rail line.

Alternative R-3: Approval of bypass for coal traffic

Approximately 0.2 mile of land described as business and industrial would be adjacent to the bypass portion of Alternative R-3. Approximately 2.4 acres of business and industrial land would be converted to rail line right-of-way by the construction of the proposed bypass route. The proposal submitted by the City of Rochester indicates that one business would potentially be located within the proposed bypass and could require relocation. Operation of a railroad in the project area could have similar effects to business and industry as referenced above for Alternative R-2. Accessability to efficient rail service combined with the proximity of the area to the Rochester Municipal Airport, I-35, and Highway 14, could encourage new industry to move into the area.

The portion of this alternative that would utilize the existing rail line would not experience construction and operational impacts. However, as mentioned above for Alternative R-1, existing rail shippers in Rochester on the existing route would not experience the benefit of immediate access to efficient rail service.

Alternative R-4: Approval of bypass for all rail traffic

Impacts that would potentially result from this alternative are described above in the bypass portion of Alternative R-3.

3.3.2.4.4 Minerals and Mining

There no known mineral and mining facilities in proximity to any of the proposed Rochester alternatives. No impacts to this land use would be expected to occur as a result of any of the proposed alternatives.

3.3.2.4.5 Public Facilities

Alternative R-1: No-Action Alternative

Public facilities in and around Rochester would continue to experience the current level of impact from the operation of the DM&E railroad. Deteriorated track conditions pose a higher risk of accident and derailment which could require public services such as police, fire department and ambulance services.

Alternative R-2: Reconstruction of existing rail line

The public facilities such as schools, churches, and hospitals that exist near the existing DM&E rail line in Rochester could expect to experience impacts during reconstruction of the existing rail line similar to those described in Section 3.2.6.5. Potential impacts would include traffic delays, fugitive dust, and noise from construction. Following reconstruction, the operation of the existing rail line would have impacts on public facilities similar to what is described in Section 3.2.6.5. General impacts to public facilities could include reduced access due to blocked road crossings, increased noise, reductions in air quality due to increased locomotive emissions, increase traffic congestion, risk of accident to pedestrians due to increased train activity, particularly in recreational areas, and reduced grade crossing safety.

Included in the public facilities which are located near the existing DM&E rail line is the Federal Medical Center of Rochester, a facility of the Federal Bureau of Prisons. This facility has structures located within 100 feet of the rail line. Additionally, the Mayo Clinic has medical facilities within 1,000 feet of the DM&E rail line in Rochester. Both of these medical facilities have expressed concerns about potential impacts from vibration created by this alternative. Potential impacts from vibration are addressed in Section 3.3.2.6.2.

Alternative R-3: Approval of bypass for coal traffic

The proposed bypass would pass within approximately 3,300 feet of the nearest school, and 2,500 feet of the nearest church. No hospital would be within four miles of the bypass portion of Alternative R-3. Potential impacts from the new construction portion of Alternative R-3 to public facilities such as schools, churches, and hospitals would not be a significant issue due to their relatively long distance from the rail line.

The portion of this alternative that utilizes the existing rail line would not result in any additional impacts to public facilities.

Alternative R-4: Approval of bypass for all rail traffic

Potential impacts to the public facilities in the bypass project area, and their distance from the proposed new bypass rail line are the same as those described for the new construction bypass portion of Alternative R-3.

3.3.2.4.6 Public Lands

Alternative R-1: No-Action Alternative

The existing rail line, east of Rochester, passes adjacent to approximately 1.9 miles of the Gordon W.Yeager State Wildlife Management Area. None of the impacts associated with the construction and operation of a new railroad would would occur to this area as reconstruction or changes in rail operation would not occur under this alternative.

Alternative R-2: Reconstruction of existing rail line

The existing rail line is adjacent to approximately 1.9 miles of the Gordon W. Yeager State Wildlife Management Area. Reconstruction of the existing rail line could create temporary impacts to this area in the form of dust, noise, and general disturbance. Because there does not appear to be any area access roads which are crossed by the railroad, traffic delays and detours are not expected to be an issue. Following construction, the operation of the railroad could create additional impacts to the project area such as increased noise from a greater number of operating trains, and safety hazards to users of the area who may use areas adjacent to the existing rail line.

Alternative R-3: Approval of bypass for coal traffic

The bypass portion of Alternative R-3 would not cross any public lands, therefore no impacts to such lands would occur as a result of this portion of Alternative R-3.

Public land on the existing rail line (Gordon W. Yeager State Wildlife Management Area) would not be expected to experience changes in the current level of impact resulting from the operation of the existing DM&E rail line.

Alternative R-4: Approval of bypass for all rail traffic

There are no impacts to public land would be expected to result from this alternative.

3.3.2.5 Water Resources

3.3.2.5.1 Surface Water Impacts

Alternative R-1: No-Action Alternative

The existing route crosses 15 streams and rivers. Alternative R-1 would have no impact on these surface waters.

Alternative R-2: Reconstruction of existing rail line

Alternative R-2 would cross 15 streams, 7 perennial and 8 intermittent, including the Zumbro River. In-stream work, such as reconstruction or installation of culverts and bridge construction, required to rehabilitate the existing rail line could result in disturbance to sediment, and increased water turbidity. These conditions would be considered temporary and would be expected to cease following the few days necessary for stream crossing construction activities. Chemicals such as fuel, lubricating oils, and other contaminants could be present in the right-of-way during reconstruction. Proper management of these substances would be required to prevent an accidental spill which could contaminate surface water resources.

Operational impacts to surface waters would be similar to those described in Section 3.2.7.1 including the introduction of chemicals into waterways from an accidental spill and disturbances caused during maintenance. Accidental introduction of toxic chemicals into surface water could cause severe and potentially long-term impacts.

Alternative R-3: Approval of bypass for coal traffic

The proposed bypass portion of Alternative R-3 would cross 28 intermittent and 8 perennial streams. Instream work such as the installation of bridges, and culverts could lead to disturbance of sediment and increased turbity. As mentioned for Alternative R-2, fuels, lubricating oils, and other potential contaminants would be present at the construction site during construction. In the unlikely event of a spill, these chemicals could find there way into the surface water resources reducing water quality. As explained in Section 3.2.7.1, increased levels of TSS in the water resulting from erosion can cause health impacts to organisms living in the streams. Alteration of the stream bank and bed could result from construction of a crossing, altering stream flows. Operational impacts would include accidental chemical spills and the potential impacts associated with them.

Stream crossings on the existing rail line would not be affected by Alternative R-3.

Alternative R-4: Approval of bypass for all rail traffic

Impacts to surface water due to Alternative R-4 would be the same as described for the new construction bypass portion of Alternative R-3.

3.3.2.5.2 Wetlands

Alternative R-1: No-Action Alternative

There is approximately 25.5 acres of wetlands within the existing DM&E right-of-way through Rochester. Because reconstruction would not occur as part of this alternative, impacts to wetlands would not occur.

Alternative R-2: Reconstruction of existing rail line

Approximately 25.5 acres of wetlands occur within the existing rail line through Rochester. Approximately 1.4 acres are riverine, approximately 1.6 acres are scrub-shrub, and the remaining approximately 22.5 acres are emergent. These wetlands would likely be lost during reconstruction of the existing rail line. Surface water runoff from construction sites could carry sediment into adjacent wetlands which would change its hydrology and result in the wetland filling in sooner than expected under existing sedimentation levels. Construction activities within the right-of-way would also cause direct disturbance and possible destruction to these wetlands if equipment are required to operate outside the existing rail line right-of-way. Alterations to drainage patterns in the project area could change the amount of water available to adjacent wetlands potentially causing them to dry up.

Alternative R-3: Approval of bypass for coal traffic

As explained in Section 3.1.5.3, the project area in southern Minnesota is in the prairie pothole region, an area with a large amount of wetlands of glacial origin. Approximately 53.2 acres of wetlands would be within the right-of-way for the proposed bypass. These would include approximately 9.5 acres of forested-scrub-shrub wetland, 8.1 acres of scrub-shrub, 2.7 acres of forest, 2.3 acres of emergent-scrub-shrub, and 0.1 acres of riverine wetlands. The remaining 30.5 acres of wetland are emergent. Wetlands within the proposed right-of-way would be lost. Conditions in the project area south of Rochester are also suitable for the existence of calcareous fens. Calcareous fens are unique wetland areas, dominated by ground water inflows and afforded a higher level of protection in Minnesota than other wetlands (Minnesota Statutes, Section

103G.223). Construction of a railroad right-of-way could cause substantial disturbance to the wetlands adjacent to the proposed route including potentially affecting drainage and groundwater flows necessary for nearby calcareous fens. Alterations in topography necessary for construction of a suitable rail bed grade could cause changes to hydrology of adjacent wetlands as drainage water is routed away from these wetlands. This action could result in the loss of wetlands that occur outside the proposed right-of-way.

The approximately 25.5 acres of wetlands on the existing rail line through Rochester would not be impacted by Alternative R-3.

Alternative R-4: Approval of bypass for all rail traffic

The 53.2 acres of wetlands in the bypass project area would experience impact as describe above for the new construction bypass portion of Alternative R-3.

3.3.2.5.3 Ground Water

Alternative R-1: No-Action Alternative

No impacts to the ground water would be expected to occur as a result of this alternative.

Alternative R-2: Reconstruction of existing rail line

As stated in Section 3.2.7.3, the rebuild of existing rail line should not result in significant impacts to underground water sources. In the unlikely event of a fuel or chemical spill the superficial aquifer in Southern Minnesota could become contaminated. Fuel and chemical spills could enter the surface water where they could migrate to ground water. However, this is unlikely due to the limited amount of potential contaminants transported by DM&E and the improved condition of its system under Alternative R-2.

Alternative R-3: Approval of bypass for coal traffic

The presence of karst topography along the bypass alignment of Alternative R-3 creates conditions for the potential contamination of ground water resources. This has been previously described in the Section 3.3.2.3.1. The porous nature of karst topography lends itself to the contamination of underground water reserves or aquifers as contaminants can pass quickly through the surface soil and rock to enter the groundwater. In the unlikely event of a derailment in a karst region which would result in a chemical spill, the ground water resources could become contaminated. An impact such as this which would occur within the railroad right-of-way could create impacts far outside the area of the rail line.

The portion of this alternative that uses the existing rail line would not result in any impacts to ground water.

Alternative R-4: Approval of bypass for all rail traffic

The potential impacts to ground water from this alternative are the same as those described for the bypass portion of Alternative R-3.

3.3.2.6 Air Quality

The types of potential impact to air quality would be similar for each of the Rochester alternatives. The amount of construction impact would be related to the distance of rail line for the alternative. Alternatives that require less new construction and are shorter in distance would potentially create less of an impact to air quality as shorter distances requires less construction disturbance that could generate fugitive dust and emissions from construction equipment. Shorter routes would also generate less emissions from locomotives operating over them. Additionally, motor vehicles stopped at grade crossings would potentially contribute to impacts on local air quality during construction and operation. Impacts associated with motor vehicles at grade crossings would vary depending on the length of time the vehicle is present and the number of vehicles present at a grade crossing. Air quality impacts were calculated according to the methodology presented in Appendix E. Table 3.3-12 presents the gross ton miles for each Rochester alternative upon which the pollutant emissions in Table 3.3-13 are based. SEA also examined the issue of fugitive coal dust and exposure to diesel locomotive emissions. These are discussed in more detail in Section 3.2.8.

Alternative R-1: No-Action Alternative

As a result of this alternative, DM&E would continue to operate at its present level on the existing rail line. No construction impacts to air quality would occur. Air quality during operation, including motor vehicle emissions at crossings and locomotive emissions along the rail line, would remain the same. Train traffic on the existing DM&E rail line would continue to operate at slow speeds and emissions from delayed vehicles would remain at current levels.

Alternative R-2: Reconstruction of existing rail line

This alternative involves the reconstruction of approximately 23.3 miles of existing DM&E rail line. Potential impacts during reconstruction would be similar to those described in Section 3.2.8, and would include fugitive dust from reconstruction activities and an increase in emissions from construction equipment and queued vehicles. Reconstruction of the existing rail line would allow for higher train speeds through grade crossing areas and thereby potentially decrease the amount of time motor vehicles are required to idle at crossings. The number of cars delayed per day may increase due to the increased number of trains traveling through these grade crossings. However, high speed trains would be expected to decrease the amount of time vehicles would be delayed at each train incident, which would decrease emissions from delayed vehicles (Table 3.3-13). As discussed in Section 3.2, SEA modeled locomotive emissions along the rail line and found that although some of EPA's thresholds for stationary sources would be exceeded, locomotive emissions would not result in the National Ambient Air Quality Standards or the Prevevention of Significant Deterioration increments for both Class I and II areas being exceeded.

Alternative R-3: Approval of bypass for coal traffic

Air quality impacts from Alternative R-3 would include total of emissions from construction of the proposed bypass and those currently occurring along the DM&E rail line through Rochester. Construction impacts to the air quality would include emissions from construction equipment, and fugitive dust from construction activities. Following construction of the bypass air quality could be reduced by the presence of train traffic in the area and the creation of 34 new grade crossings along the proposed bypass. Locomotive operation would create a new source of emissions in the bypass area, but they would be similar to those created by diesel farm equipment. However, because Alternative R-3 would be approximately 10.8 miles longer than Alternative R-2, it would have greater overall emissions (Table 3.3-13). Emissions created by vehicles delayed at grade crossings would also contribute to the air quality. Air quality along the existing rail line would remain relatively the same. No construction activities would occur along the existing rail line other than required maintenance activities associated with the operation under current conditions.

Alternative R-4: Approval of bypass for all rail traffic

Potential impacts associated with the construction and operation of the proposed bypass would be the same as those described for the new construction bypass portion of Alternative R-3. The existing rail line through town would no longer be used. All train traffic would be routed along the proposed bypass. Emissions from locomotives and delayed vehicles would no longer occur.

Table 3.3-11 Alternatives Operations Data for Rochester, MN					
Alternative	**Length (miles)**	**Fuel Fac. GTM*/gallon**	**Number of Trains/Day**	**Gross Tons/year**	**GTM**
R-1	23.3	993.8	3 Trains	8,817,165	205,439,944.5
R-2	23.3	993.8	11 Trains 21 Trains 37 Trains	32,329,605 72,067,118 134,539,615	753,279,796.5 1,679,163,849.4 3,134,773,029.5
R-3	23.3 (rebuild)	993.8	3 trains	8,817,165	205,439,944.5
	34.1 (new)		8 Trains 18 Trains 34 Trains	23,512,440 61,771,815.4 123,630,997.6	801,774,204.0 2,106,418,906.1 4,215,817,017.1
R-4	34.1	993.8	11 Trains 21 Trains 37 Trains	32,329,605 72,067,118 134,539,615	1,102,439,530.5 2,457,488,723.8 4,587,800,871.50
* gross ton miles					

Table 3.3-12
Emissions Levels of Proposed Alternatives for Rochester, MN

Alternative	Number of Trains/day	Emissions Levels											
		HC (tpy)		CO (tpy)		NO_X (tpy)		SO_2 (tpy)		PM_{10} (tpy)		Pb (tpy)	
		Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold
R-1	3 trains	N/A	100	N/A	100	N/A	100	N/A	100	N/A	100	N/A	0.6
R-2	11 trains	6.01	100	16.17	100	96.31	100	10.12	100	4.07	100	0.000331	0.6
	21 trains	16.18		49.48		**259.09**		27.21		10.95		0.000683	
	37 trains	32.16		86.43		**515.00**		54.09		21.77		0.001769	
R-3	11 trains	8.80	100	23.66	100	**140.96**	100	14.81	100	5.96	100	0.000484	0.6
	21 trains	23.50		63.17		**375.93**		38.53		15.95		0.000890	
	37 trains	46.83		**125.83**		**749.74**		78.75		31.69		0.002575	
R-4	11 trains	9.74	100	26.51	100	**157.70**	100	16.81	100	6.66	100	0.000542	0.6
	21 trains	24.49		66.45		**395.92**		42.01		16.73		0.001360	
	37 trains	48.81		**129.30**		**770.45**		80.92		32.56		0.002646	

HC - Hydrocarbons
SO_2 - Sulfur Dioxide
CO - Carbon Monoxide
NO_X - Oxides of Nitrogen
PM_{10} - Particulate Matter (less than 10 microns in diameter)
Pb - Lead
tpy - tons per year

3.3.2.7 Noise and Vibration

The construction, or reconstruction, and operation of the DM&E rail line through or around the City of Rochester would result in an increase in noise and vibration. Section 3.2.9, provides a description of noise sources associated with rail construction and operation such as noise generated by construction equipment, wayside noise, and locomotive horn sounding. SEA determined the number of noise sensitivereceptors (e.g. homes, schools, hospitals, churches) potentially impacted by the Rochester alternatives. SEA calculated the distance (contour) from the rail line where the average daily noise level (L_{dn}) would be equal to 65 dBA and 70 dBA. These distances were calculated by SEA for the existing level of traffic as well as the levels of traffic evaluated by SEA (20 MNT, 50 MNT, 100 MNT). The number of noise sensitivereceptors for each alternative at each level of analysis are found in Tables 3.3-19 through 3.3-22.

The City of Rochester conducted a study of present and predicted noise levels along the existing rail line through Rochester. The City submitted this report to SEA.[7] SEA reviewed the Rochester study and determined it generally employed similar methodology as that SEA used. However, SEA determined its own study to be more conservative, estimating greater potential noise impacts along the proposed bypass alignment. In order to provide a consistant analysis methodology for the Rochester alternatives and conservatively consider all the potential noise impacts, SEA has included the results of its noise study in this section.

3.3.2.7.1 Noise

Alternative R-1: No-Action Alternative

Noise associated with the operation of the rail line would remain the same as what is currently experienced. However, no reconstruction noise would be experienced due to this alternative. The number of noise sensitivereceptors affected by existing rail line operation would remain the same (Table 3.3-14).

Alternative R-2: Reconstruction of existing rail line

Increased noise would be present during reconstruction and operation of this alternative. Reconstruction activities such as grading, rail installation, and rail bed preparation would produce noise similar to that described in Section 3.2.9. The number of noise sensitivereceptors that

[7] For more information concerning the noise study submitted by the City of Rochester, contact Gary Neumamn, Assistant City Administrator, City of Rochester, 201 4th Street, SE, Rochester, MN. 55904.

would be exposed to average daily noise levels of 65 dBA and 70 dBA during rail operations are presented in Table 3.3-15.

Alternative R-3: Approval of bypass for coal traffic

Noise increase would occur during the construction of the bypass. Activities such as grading, rail bed preparation, and rail installation would produce increased levels of noise during construction. There is presently no rail line along the bypass alignment. The area is predominantly rural. Construction equipment would create noise similar to farm equipment. However, the amount of construction equipment would be greater than that necessary to farm, thus the noise levels would be increased.

Operation of Alternative R-3 would introduce a new source of noise to the area and noise sensitivereceptors affected by train noise would not have been previously exposed to this type of noise. However, the sparsely populated, rural setting along the bypass would result in few noise sensitivereceptors being affected (Table 3.3-16).

Impacts from noise on the existing rail line would be similar to those described for Alternative R-1 due to the continued use of the existing rail line under current conditions. The total number of noise sensitivereceptors for this alternative currently exposed to 65 dBA L_{dn} and 70 dBA L_{dn} or greater are presented in Table 3.3-14.

Alternative R-4: Approval of bypass for all rail traffic

During construction of the bypass, noise impacts would be similar to those described for the bypass portion of Alternative R-3 (Table 3.3-17).

Based on all present and future rail traffic using the new construction bypass noise levels during operation would be expected to be greater than the bypass portion of Alternative R-3. However, as stated above for Alternative R-3, the sparsley populated, rural setting along the bypass would result in few noise sensitivereceptors being affected (Table 3.3-17).

Table 3.3-13 Noise Receptor Counts for Alternative R-1: No-Action				
Operation Level and Location	**Noise Receptors at 65dBA L_{dn} /70dBA L_{dn}**			
	Wayside	**Wayside/Horn**	**Horn**	**Total**
Existing conditions-3 trains per day				
Olmsted	**9 / 1**	**152 / 27**	**1,464 / 684**	**1,625 / 712**
Chester	0 / 0	4 / 0	95 / 12	99 / 12
Rochester	0 / 0	56 / 24	982 / 409	1,038 / 433
Byron	9 / 1	90 / 2	374 / 261	473 / 264

Table 3.3-14 Noise Receptor Count for Alternative R-2: Reconstruction of Existing Rail Line				
Operation Level and Location	**Noise Receptors at 65 dBA L_{dn} /70 dBA L_{dn}**			
	Wayside	**Wayside/Horn**	**Horn**	**Total**
11 trains per day				
Olmsted	**9 / 2**	**182 / 58**	**1,464 / 659**	**1,658 / 719**
Chester	0 / 0	6 / 0	98 / 12	105 / 12
Rochester	0 / 0	86 / 15	982 / 375	1,068 / 390
Byron	9 / 2	90 / 32	374 / 270	473 / 304
21 trains per day				
Olmsted	**26 / 9**	**336 /121**	**1,951 / 1,049**	**2,313 / 1,179**
Chester	0 / 0	18 / 1	127 / 23	145 / 24
Rochester	3 / 0	156 / 44	1,407 / 703	1,566 / 747
Byron	22 / 9	160 / 75	392 / 315	574 / 399
37 trains per day				
Olmsted	**52 / 9**	**554 / 210**	**2,988 / 1,520**	**3,594 / 1,739**
Chester	4 / 0	25 / 2	164 / 46	193 / 48
Rochester	14 / 0	263 / 88	2,344 / 1,076	2,621 / 1,164
Byron	32 / 9	263 / 119	449 / 398	744 / 526

Table 3.3-15 Noise Receptor Count for Alternative R-3: Bypass for Coal Traffic Only				
Operation Level and Location	**Noise Receptors as 65 dBA L_{dn}/ 70dBA L_{dn}**			
	Wayside	**Wayside/Horn**	**Horn**	**Total**
11 trains per day	9 / 1	153 / 27	1,486 / 690	1,648 / 718
21 trains per day	9 / 1	154 / 27	1,502 / 699	1,665 / 727
37 trains per day	10 / 1	159 / 28	1,533 / 710	1,707 / 739

Table 3.3-16 Noise Receptors for Alternative R-4: Bypass for All Rail Traffic				
Operation Level and Location	**Noise Receptors at 65 dBA L_{dn} / 70 dBA L_{dn}**			
	Wayside	**Wayside/Horn**	**Horn**	**Total**
11 trains per day Bypass	0 / 0	1 / 0	24 / 6	25 / 6
21 trains per day Bypass	1 / 0	2 / 0	53 / 18	56 / 18
37 trains per day Bypass	2 / 0	5 / 1	90 / 29	97 / 30

3.3.2.7.2 Vibration

Operation of any of the proposed action alternatives would likely result in increased ground vibration due to operation of larger and heavier trains than currently operate over the existing DM&E rail line. Section 3.2.9.1, outlines vibration contours established by the SEA, and the potential impacts to structures within these described distances. SEA has analyzed the area surrounding the Rochester alternatives and determined the number of structures within each vibration contour. Structures located within 100 feet of the railroad would be the most likely to experience damage from vibration, while outside of 400 feet from the rail line, only structures which contain sensitive equipment such as hospitals could potentially be impacted.

Alternative R-1: No-Action Alternative

Since reconstruction would not occur along the exiting rail line and train size and numbers would not increase, this alternative would not result in a change in ground vibration. There are currently 32 structures within 100 feet of the DM&E rail line on this alternative, 180 from 101-200 feet, and 364 from 201- 400 feet (Table 3.3-18).

Alternative R-2: Reconstruction of existing rail line

The number of structures that occur within 400 feet of the existing rail line and could therefore be potentially affected by rail line vibration from the operation of Alternative R-2 would be the same as those presented for Alternative R-1 (Table 3.3-18). These structures include a security fence at the Federal Medical Center of Rochester, a Federal Bureau of Prisons facility, which is approximately 200 feet from the existing rail line. The Federal Medical Center is an In-patient Mental Health facility for Federal offenders. The facility is located adjacent to the DM&E rail line. The perimeter of the Federal Medical Center facility is secured by a double 12 to 16-foot high security fence. The fence is designed to detect vibrations to alert facility personnel. Based on information provided by the Federal Medical Center management, the security fence on the north property line is approximately 50 feet from the rail line. During the scoping process, the Federal Medical Center expressed concern that the proposed project would interfere with the operation of their security fence.

SEA reviewed manufacture's specifications received from the Federal Medical Center. According to manufacuter's specifications, the security fence is designed to only report signals that are similar to the disturbance caused by climbing, cutting, or lifting the fence fabric. The manufactures' information further explains that the state-of-the-art signal processing of the fence system filters out disturbances caused by wind, rain or other non-threatening factors. Based on this information, SEA has determined that no impact to the security fence would occur as a result of vibrations from passing coal trains.

SEA has determined that certain sensitive medical equipment, such as magnetic resonance imaging systems (MRI), and scanning electron microscopes (SEM) beyond 400 feet from the rail line could potentially be affected by levels of vibration too low to be perceived by humans. The Mayo Clinic operates medical facilities in downtown Rochester which contain MRI systems and SEMs. According to information provided by the Mayo Clinic, the Charlton North facility (located approximately 850 feet from the existing DM&E rail line) currently houses 10 General Electric 1.5T, Sigma LX MRI systems. This particular MRI has very low limits for floor vibration. SEA has studied the construction of the Charlton North building, and the acoustic qualities of the surrounding soil and bed rock. The Charlton North facility is constructed on a slab-on-grade on solid bedrock with a layer of sand for leveling. The depth of soil to bedrock between the facility and the DM&E rail line is approximately 10 feet. These factors combine to create a set of conditions that would inhibit ground vibrations, making impacts to the MRI system from ground vibration unlikely. However, there are several rail switches associated with existing rail sidings and spurs located within 1,000 feet of the Charlton North facility which could cause higher than anticipated ground vibrations. Higher vibration could result due to switches having breaks in the rail to allow movement of trains onto other rail lines. These breaks create an impact with the rail when the car wheels pass over the rail break. SEA recommends that, should this alternative be approved, a vibration study be conducted at this facility to document existing ground vibration from unit grain trains. This data could then be employed to project future vibration, based on upgraded track, higher train speeds and increased train weight to determine the potential level of vibration at this facility. Appropriate design measures could then be employed to protect against adverse levels of vibration. Potential impacts to the MRI systems could then be avoided.

SEA has determined that all other medical facilities operated by the Mayo Clinic in Rochester, Minnesota are of an acceptable distance from the DM&E rail line that impacts from train produced ground vibration would not occur.

Pemstar Precision Electromechanical Manufacturing is located approximately 150 feet from the existing DM&E rail line in Rochester. Pemstar manufactures flexible circuit and circuit board assemblies, and other complex electronic equipment. Pemstar has commented in a letter to the Board that if Alternative R-2 would be approved, Pemstar would not be able to continue operations in its facility adjacent to the DM&E rail line due to vibrations of passing trains. SEA has made attempts to acquire from Pemstar, the vibration specification on their manufacturing equipment. To date no information has been received by SEA. Without this information, SEA cannot address the probability that increased rail traffic would prohibit Pemstar from operating a manufacturing facility at the above described location.

Alternative R-3: Approval of bypass for coal traffic

There would be 32 structures within 100 feet of Alternative R-3 (Table 3.3-18). All of these structures are currently adjacent to the existing rail line portion. There would be 181 structures between 101-200 feet from this alternative, yet only one of these would be along the proposed bypass. There would be 368 structures within the 201-400 foot range, 364 would be along the existing rail line, 4 would be along the proposed bypass. Because only existing rail traffic (3 trains per day) would use the existing rail line, structures located near the existing rail line would not experience a change in ground vibrations under this alternative. The 5 structures located between 100-400 feet of the proposed bypass would be exposed to a new source of ground vibration from the transport of unit coal trains and would therefore experience increase vibration. Unlike houses built in proximity to an existing rail line, houses built along the bypass may lack structural fortification appropriate for the vibration levels generated by the operation of a railroad. However, the sparsely populated, rural setting of the bypass project area lends itself to low numbers of impacted structures. There are no facilities identified near the proposed bypass using sensitive equipment that could be impacted by vibration.

Alternative R-4: Approval of bypass for all rail traffic

There would be no structures within 100 feet of the proposed bypass, 1 structure between 101-200 feet and 4 structures between 201-400 feet (Table 3.3-18). These structures would be expected to experience the affects of ground vibrations as described in Section 3.2.9.1. There are no hospitals or other structures known to contain sensitive equipment near the proposed bypass.

Table 3.3-17
Rochester Alternatives
Number of Structures Potentially Impacted by Vibration

Alternative	0-100 feet	101-200 feet	201-400 feet	Total
R-1	32	180	364	576
R-2	32	180	364	576
R-3	32	181	368	581
R-4	0	1	4	5

3.3.2.8 Biological Resources

Biological resources include vegetation, wildlife, aquatic resources, and sensitive and endangered species. Each of these is discussed below.

3.3.2.8.1 Vegetation

Vegetative communities occurring along the existing rail line right-of-way were assessed and measured using aerial photography of the area. Vegetatative comunities were measured on both sides of the rail line, therefore different types of vegetation could appear on either side of the track adding up to two times the length of the specified section of rail line. As stated in Section 3.2.10.1, the significance or insignificance of impacts to the vegetative communities would be determined by the overall value and availability of the community. For example, impacts to areas of native prairie and mature timber would be considered more significant than impacts to cultivated cropland and pasture.

Alternative R-1: No-Action Alternative

The existing rail line in Rochester passes adjacent to approximately 4.7 miles of pasture, approximately 20.8 miles of woodlands and approximately 4.9 miles of crop land. Disturbance to these vegetative communities from the operation of the existing DM&E rail line would remain at the current minimal level.

Alternative R-2: Reconstruction of existing rail line

The amount and types of vegetative communities currently found on the existing rail line are the same as those indicated for Alternative R-1. The potential impacts to vegetation resulting from the reconstruction of the existing rail line through Rochester would be similar to those described in Section 3.2.10.1. Construction impacts would include damage and destruction of vegetation within the rail line right-of-way and possible adjacent areas from operation of reconstruction equipment. Operational impacts resulting from Alternative R-2 would include loss of vegetation due to herbicide use on the right-of-way or damage due to periodic trimming to maintain the right-of-way.

Alternative R-3: Approval of bypass for coal traffic

The bypass portion of Alternative R-3 would be adjacent to approximately 60.0 miles of agricultural land and 5.1 miles of woodland. Construction of the proposed bypass would require the conversion of approximately 727.3 acres of agricultural land and 62.0 acres of woodlands to rail line right-of-way. These vegetative communities would be lost for the life of the rail line. Disturbance of the ground during construction, and re-vegetation of the right-of-way upon completion of the rail line would allow for the potential introduction of non-native and undesirable species of vegetation. The presence of undesirable species could require increased use of herbicides to control their spread, which could impact non-target plant species.

Because no new construction would occur and rail traffic levels would not change, the portion of this alternative which utilizes the existing rail line would have no additional impacts to vegetation.

Alternative R-4: Approval of bypass for all rail traffic

Impacts to vegetation from the construction and operation of a new construction bypass on Alternative R-4 would be the same as those described for the bypass portion of Alternative R-3.

3.3.2.9 Wildlife

The species and type of wildlife found along the Rochester alternatives would be similar to those described in Section 3.2.11. Potential impacts to wildlife from each alternative are discussed below.

Alternative R-1: No-Action Alternative

Wildlife that inhabit the area near the existing rail line have likely adapted to the level of disturbance which exists under DM&E's current operating levels. No additional disturbance would be created by this alternative as no changes in the current operations would occur under this alternative. Some mortality to wildlife would likely continue, but would be minimal due to few trains and slow speeds.

Alternative R-2: Reconstruction of existing rail line

Wildlife species currently occupying the existing railroad right-of-way would experience a high level of disturbance during reconstruction including loss of habitat and disturbance from reconstruction equipment and workers (Section 3.2.11). Those individuals that are capable, would likely leave the right-of-way to avoid disturbance and seek more isolated areas. Once the reconstruction is complete and the right-of-way is revegetated, some formerly displaced individuals would likely return. Others, that require more specific habitats lost during reconstruction, would permanently relocate to nearby, suitable habitat. Wildlife, such as reptiles, amphibians, and various invertebrates that currently use the approximately 25.5 acres of wetland within the right-of-way could potentially be lost. Wildlife currently utilizing the land adjacent to the existing railroad corridor as habitat have likely become adapted to the operation of a railroad and would not be significantly impacted. The increase in rail traffic and higher speeds could cause increased mortality to wildlife species that utilize the right-of-way for cover, nesting, or foraging due to them being unfamilar with the frequency and speed of trains. This impact would be significant on an individual basis, but would not create permanent damage to the area's overall wildlife community.

Alternative R-3: Approval of bypass for coal traffic

In addition to temporary disturbances created from reconstruction and operation activities discussed above, some of the wildlife species inhabiting the proposed bypass corridor would experience a permanent loss of habitat. Approximately 727.3 acres of cropland, and 62 acres of woodlands would be converted from their present land use to rail road right of way. Approximately 53.2 acres of wetland habitat would be disturbed and potentially destroyed during construction of the Alternative R-3. Amphibian, reptile and waterfowl species that use this wetland habitat would be displaced or lost during construction. Those species that are capable would relocate to other suitable habitat. Birds species and small mammals that utilize woodlands and fence rows within the proposed right-of-way would lose habitat when these lands are converted to rail road right-of-way. Wildlife would be presented with the obstacle of crossing a railroad where none previously existed. Wildlife that utilize the rail bed as a path or for cover, nesting, and foraging would be susceptible to mortality from collisions with trains.

Because no additional disturbance would occur along the existing rail line, wildlife would experience the same level of impact as discussed above in Alternative R-1.

Alternative R-4: Approval of bypass for all rail traffic

Because Alternative R-4 also involves the construction of a bypass, impacts to wildlife during construction would be similar to those of Alternative R-3. However, the increased train traffic (three more trains per day) experienced along the new rail line of Alternative R-4 would cause a greater level of disturbance to wildlife and increase the likelihood of wildlife being struck by a train.

3.3.2.9.1 Aquatic and Fisheries Impacts

Alternative R-1: No-Action Alternative

Impacts would not occur to aquatic resources as a result of this alternative as no construction or reconstruction activities would occur at or near stream crossings, other than those associated with normal maintenance activities.

Alternative R-2: Reconstruction of existing rail line

The existing DM&E rail line through Rochester crosses seven perennial streams and eight intermittent streams. The Zumbro River is crossed in the center of town. Potential impacts to organisms such as fish, mussels, and aquatic invertebrates would be most likely during the reconstruction phase of the project. Increased suspended soil particles in the water resulting from construction site runoff, as well as direct disturbance to sediments from reconstruction equipment during the reconstruction or placement of bridges and culverts would create a temporary impact on the aquatic life as explained in Section 3.2.11.4. Operational impacts would be similar to those explained in Section 3.2.11.4, including exposure of organisms to toxic substances such as herbicides, fertilizer, and fuel.

Alternative R-3: Approval of bypass for coal traffic

The proposed bypass route of Alternative R-3 would cross 10 perennial streams, and 28 intermittent streams. Aquatic organisms inhabiting these waters would experience the impacts of increased TSS from erosion and instream work as described in Section 3.2.11.4. The everyday operations of the railroad could impact aquatic resources as described in Section 3.2.11.4, including accidental spills of toxic substances.

Potential impacts along the existing rail line would be the same as those discussed for Alternative R-1.

Alternative R-4: Approval of bypass for all rail traffic

The construction of the bypass could potentially impact the 38 streams and rivers it would cross, as described above for the bypass portion of Alternative R-3.

3.3.2.9.2 Threatened and Endangered Species

A complete list of impacts to threatened and endangered species for the entire Minnesota project area is described in Section 3.2.11.5. The existing conditions chapter lists several species of concern to the State of Minnesota. These species are listed by county. However, none of these listed species are known to inhabit the project areas of the Rochester Alternatives. Because of this, impacts to threatened and endangered species are not expected to occur from the construction or operation of any of the proposed Rochester alternatives.

3.3.2.10 Transportation

Impacts resulting from the reconstruction or construction of any of the action alternatives would be similar to those described in Section 3.2.12. Potential construction impacts would include traffic delays for motorists and rail traffic, road and lane closures, traffic detours, inconvenience to pedestrians using roadways which cross the rail line, and impedence to movement of emergency vehicles.

As previously stated in Section 3.2.12, in order to analyze the effects of the proposed alternatives on the roadway system, SEA analyzed grade crossings along the Rochester alternatives for three proposed levels of operation; 20 MNT, 50 MNT and 100 MNT for train lengths of both 6,400 feet (115 rail cars) and 7,400 feet (135 rail cars). SEA calculated potential changes in vehicle delay at those crossings where ADT volumes are 5,000 or greater (Appendix G). SEA concluded that the potential effect of increased train traffic for highways with average daily traffic (ADT) volumes below 5,000 would be experienced by very few drivers and the additional vehicular delay would be minimal. SEA categorized crossing based on the level of service. Levels of service, ranging from free-flowing to severely congested, were quantified in Table 3.3-19 as follows:

Table 3.3-18
Grade Crossing Level of Service

Level of Service	Average Total Delay (sec/vehicle)
A	≤5
B	>5 and ≤10
C	>10 and ≤20
D	>20 and ≤30
E	>30 and ≤45
F	>45

Alternative R-1: No-Action Alternative

Continuing to operate the existing rail line at the current level would create no new impacts to the transportation system in Rochester above those currently experienced at grade crossings due to slow train speeds and inefficient rail movements. All levels of service at crossings would remain the same, train speeds through town and resulting vehicle delays at grade crossings would not change. Rail shippers in Rochester including Rochester Public Utilities, Seneca Foods Corp., Rochester Iron and Metal, Tamarack Materials, General Warehouse, TexPar Energy, Inc., and United Building Center would continue to receive inefficient rail service.

Alternative R-2: Reconstruction of existing rail line

Reconstruction activities would cause temporary impacts to the seven public grade crossings on the existing DM&E rail line. These impacts would include increased traffic and congestion on roadways due to the transportation of materials, as well as temporary closures and detours at crossings during reconstruction.

20 MNT

There are seven public crossings in Olmsted County, all along the existing rail line, with ADT's above 5,000 for which SEA performed vehicle delay calculations. All seven crossings would experience a reduction in delay per stopped vehicle due to increased train speeds. The level of service would be A under post-Construction conditions for both train length scenarios. The crossings would also experience a reduction in maximum vehicle queue length.

50 MNT

All seven public crossing analyzed for Alternative R-2 experience a reduction in delay per stopped vehicle due to increased train speeds. The levels of service would be A for the 6,400 feet train scenario and B for the 7,400 feet scenario under this alternative conditions. The crossing would also experience a reduction in maximum vehicle queue length.

100 MNT

All seven public crossing analyzed would experience a reduction in delay per stopped vehicle due to increased train speeds. The levels of service would be B for the 6,400 feet train scenario and C for the 7,400 feet scenario for Alternative R-2. The crossing would also experience a reduction in maximum vehicle queue length.

Alternative R-3: Approval of bypass for coal traffic

New construction activities would create temporary impacts to the flow of traffic at the 34 new grade crossings created by this alternative. Traffic would be delayed or detoured around grade crossings during construction activity.

The bypass portion of Alternative R-3 does not have any crossings where average daily traffic (ADT) volumes are 5,000 or greater. SEA concluded that the potential effect of increased train traffic for highways with ADT volumes below 5,000 would be experienced by very few drivers and the additional vehicular delay would be minimal.

There are seven public crossings along the existing rail line portion of Alternative R-3 with ADT's above 5,000 that SEA performed vehicle delay calculations. Delays at these crossings would remain the same as no change in rail operations at these crossings would occur.

Alternative R-4: Approval of bypass for all rail traffic

As described for Alternative R-3, new construction activities would cause temporary delays and detours in traffic during construction activities.

Alternative R-4 does not have any crossings where ADT volumes are 5,000 or greater. SEA concluded that the potential effect of increased train traffic for highways with ADT volumes below 5,000 would be experienced by very few drivers and the additional vehicular delay would be minimal. However, delay events at these crossings would occur three more times per day than under Alternative R-3. Delays at crossings along the existing rail line would cease except for those associated with rail operations to serve Rochester's rail shippers.

3.3.2.11 Safety

Increased train activity could affect the safety of roadway users at highway/railroad grade crossings (Section 3.2.13). Rail line reconstruction, new rail construction, and operation could affect the safety of motorists at grade crossings, including school bus crossings, in a way that is similar to what is described in Section 3.2.12 for the existing rail line. Because siding locations affect the safety analysis (and each Extension Alternative would have a slightly different siding layout), the Rochester alternatives were analyzed based on each new rail line Extension Alternative (Alternatives B, C, and D discussed in Section 2.2.8, Table 2-6). The following describes the potential safety impacts that could result from the various alternative routes through and around Rochester.

Alternative R-1: No-Action Alternative

Because no new construction or change in rail operation would occur from this alternative, safety risks associated the railroad would remain at its current level. However, as stated in Chapter 1, without upgrades to their current rail system, DM&E would continue to have one of the worst rail safety records in the railroad industry. The existing DM&E railroad is crossed 373 times each weekday by school buses during the school year. A list of school bus crossings potentially effected by the existing DM&E railroad in Rochester school district are presented in Table 3.3-20.

Table 3.3-19 School Bus Crossings for Rochester Alternatives		
Alternative	**Street Name**	**Number of Crossings per day**
R-1	7th Street, NW 11th Avenue, NW 6th Avenue, NW 4th Avenue, NW Broadway Civic Center Drive/2nd Avenue, NE 9th Avenue, NE 11th Avenue, NE 15th Avenue, NE East Circle Drive County Road 9 SE County Road 11 SE TWP 211/10th Street at 60th Avenue County 119/Chester Avenue, SE	11 60 19 33 4 41 15 82 11 63 11 7 1 15
R-2	Same as Alternative R-1	
R-3 (Bypass portion)	County Highway 16 County Highway 1	3-5 total for both Highways
R-4	Same as Alternative R-3	3-5

Alternative R-2: Reconstruction of existing rail line

Safety concerns for Alternative R-2 would be similar to those described in Section 3.2.13. The existing rail line through Rochester has 27 grade crossings. Frustration brought on by reconstruction delays could cause motorists to attempt crossings when conditions are not safe, putting themselves and construction crews at risk of injury. Delays at crossings may result in motorists using alternative routes, increasing traffic on local roads and through neighborhoods.

20 MNT

SEA's safety analysis showed that for the 27 public highway/railroad grade crossings studied for Alternative R-2, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0007 to 0.005. This translates into a range of increase from one accident every 1,410 years to one accident every 200 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An overall increase in the accident frequency would be observed when considering crossings under Extension Alternative B, resulting in a system-wide change in accident frequency in Rochester of 0.01. This represents a predicted increase of one accident every 103 years. An overall decrease in the accident frequency would be observed when considering crossings under Extension Alternatives C and D, resulting in a system-wide change in accident frequency in Rochester of -0.008 for Alternative C and -0.002 for Alternative D. This represents a predicted decrease of one accident every 127 years (Alternative C) and every 510 years (Alternative D). A total of one accident occurred at crossings between 1993 and 1997.

<u>50 MNT</u>

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation under Extension Alternatives B, C, and D would range from 0.002 to 0.04. This translates into a range of increase from one accident every 525 years to one accident every 25 years, respectively. SEA determined that the predicted increases resulting from the proposed reconstruction would be significant at the Broadway North crossing (FRA ID No.193277D, MP 49.10). This highway/rail grade crossing is classified as Catagory A. SEA found the predicted increases at the other locations to be below the criteria for significance.

An overall increase in the accident frequency would be observed when considering crossings for Alternative R-2, resulting in a system-wide change in accident frequency in Rochester of 0.237. This represents a predicted increase of one accident every four years.

<u>100 MNT</u>

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.004 to 0.027. This translates into a range of increase from one accident every 232 years to one accident every 37 years, respectively. SEA determined that the predicted increases resulting from the proposed reconstruction would be significant at the Broadway North crossing (FRA ID No. 193277D, MP 49.10). This highway/rail grade crossing is classified as Category A. SEA found the predicted increases at other locations to be below the criteria for significance.

An overall increase in the accident frequency would be observed when considering Alternative R-2, resulting in a system-wide change in accident frequency in Rochester of 0.382. This represents a predicted increase of one accident every three years. However, overall rail safety would be expected to improve over current conditions following the replacement of the old track with upgraded track.

Alternative R-3: Approval of bypass for coal traffic

Construction impacts to safety under Alternative R-3 would be similar to those described in Section 3.2.13, including the presence of construction equipment and frustrated motorists and pedestrians making unprotected rail crossings. New grade crossings would be established where the bypass route would cross existing roadways. SEA calculated the potential accident frequency[8] at each of these crossings (presented below). In addition, SEA contacted the Rochester School District for information on school bus use of these new grade crossings. The Rochester School District estimates that two of these new grade crossings would be crossed by school buses a total of five times each school day. School bus traffic levels at grade crossings are presented in Table 3.3-20.

<u>20 MNT</u>

SEA's safety analysis showed that for the 34 new public highway/railroad grade crossings required for Alternative R-3 the predicted accident frequency at the 20 MNT level of operation would range from 0.009 to 0.045. This translates into a range of estimated annual accident frequency from one accident every 111 years to one accident every 22 years, respectively. SEA found these predicted rates to be below the criteria for significance.

<u>50 MNT</u>

SEA's safety analysis showed that the predicted accident frequency at the 50 MNT level of operation would range from 0.013 to 0.06. This translates into a range of estimated annual accident frequency from one accident every 77 years to one accident every 17 years, respectively. SEA found these predicted rates to be below the criteria for significance.

<u>100 MNT</u>

SEA's safety analysis showed that the predicted accident frequency at the 100 MNT level of operation would range from 0.018 to 0.072. This translates into a range of estimated annual accident frequency from one accident every 56 years to one accident every 14 years, respectively. SEA found these predicted rates to be below the criteria for significance

[8] No siding plan was available for the Rochester bypass alignment. Therefore, no sidings were considered in SEA's analysis.

SEA's safety analysis showed that for the 27 highway/railroad grade crossings impacted by three trains per day on the existing rail line through Rochester, the predicted accident frequency at all levels of operation would range from 0.004 to 0.095. This translates into a range of estimated accident frequency from one accident every 250 years to one accident every 11 years, respectively. SEA found these predicted rates to be below the criteria for significance.

Alternative R-4: Approval of bypass for all rail traffic

Safety impacts during construction would occur at 34 new grade crossing and would be similar to those described for the bypass portion of Alternative R-3, including the presence of construction equipment and frustrated motorists and pedestrians making unprotected rail crossings. Alternative R-4 would include two grade crossings which would be crossed a total of five times each school day by the Rochester Public School District, school bus routes (Table 3.3-20).

20 MNT

SEA's safety analysis showed that for the 34 new public highway/railroad grade crossings required for Alternative R-4, the predicted accident frequency at the 20 MNT level of operation would range from 0.010 to 0.051. This translates into a range of estimated annual accident frequency from one accident every 100 years to one accident every 20 years, respectively. SEA found these predicted rates to be below the criteria for significance.

50 MNT

SEA's safety analysis showed that the predicted accident frequency at the 50 MNT level of operation would range from 0.014 to 0.063. This translates into a range of estimated annual accident frequency from one accident every 71 years to one accident every 16 years, respectively. SEA found these predicted rates to be below the criteria for significance.

100 MNT

SEA's safety analysis showed that the predicted accident frequency at the 100 MNT level of operation would range from 0.019 to 0.074. This translates into a range of estimated annual accident frequency from one accident every 53 years to one accident every 14 years, respectively. SEA found these predicted rates to be below the criteria for significance.

3.3.2.12 Hazardous Materials

Transportation of Hazardous Materials

Neither the construction or operation of any of the proposed alternatives would result in increased types or amounts of hazardous materials being transported by DM&E. As stated in Section 3.2.14, the reconstruction of the existing rail line would likely further reduce the potential for an accident involving the release of hazardous substances by providing a higher quality rail line for operations. The construction of a bypass route would also reduce the potential for the release of hazardous substances due to derailment due to improved rail line conditions. The No-Action alternative would not change the potential for release for hazardous substances from that currently experienced due to operation of trains along the deteriorated rail line. The likelihood of such an accident is, however, currently low due to the minimal quantities of such materials transported.

Hazardous Material Sites.

As described in Section 3.2.14, hazardous material sites are places where releases of hazardous materials have been reported to local, state, or Federal authorities. In Olmsted County 6 LUST sites are listed within 0.5 mile of the DM&E rail line (Table 3.1-18). DM&E should coordinate with the EPA, Minnesota Pollution Control Agency, and the Minnesota Department of Environmental and Natural Resources Protection to determine if contaminated sites occur within the proposed right-of-ways.

3.3.2.13 Energy Resources

Transportation of Energy Resources

Upgrade of the existing DM&E rail line would provide a more cost effective transportation route for PRB coal as discussed in Section 3.2.15.

Utilization of Energy Resources

The overall rail route DM&E has proposed is designed to be shorter and more efficient for transport of PRB coal to specific markets than the routes of other rail carriers. This would make transportation of the coal from the PRB to potential markets more affordable while using less fuel to transport the product. Of the various alternative alignments proposed for Rochester, the existing DM&E rail line through town represents the shortest and most direct route. The bypass would be 10.8 miles longer than the comparable section of the existing rail line route. More fuel would be required annually to transport freight around Rochester using either Alternative R-3 or R-4 than by utilizing the existing route through town. This additional fuel consumption would become greater as the number of trains increases.

3.3.2.14 Cultural Resources

An evaluation of the cultural resources that exist within and near the existing DM&E right-of-way in Minnesota is found in Section 3.2.15. The list of potential cultural resources within the existing right-of-way includes structures associated with the railroad such as stone culverts, depots, and the railroad itself.

Alternative R-1: No-Action Alternative

Because Alternative R-1 would not involve any reconstruction or change in rail operations, it would not result in any impacts to cultural resources.

Alternative R-2: Reconstruction of existing rail line

A complete evaluation of the cultural resources that exist within and near the existing DM&E right-of-way in Minnesota is presented in Section 3.2.15. Forty cultural resource sites have been identified in or immediately adjacent to the existing rail right-of-way along Alternative R-2. The list of potential cultural resource sites along Alternative R-2 includes 36 sites that are considered elgible for the National Register of Historic Places (NRHP). The list of cultural resource sites within the existing rail right-of-way includes structures associated with DM&E railroad , such as stone box culverts, stone arches, and wooden trestles. As the railroad is reconstructed these structures could sustain damage or require replacement. Replacement or modification of National Register eligible bridges and culverts could result in the existing rail line no longer being eligible as a linear historic district. Any impacts associated with reconstruction of the existing DM&E rail line would require mitigation in accordance with the Programatic Agreement (PA). Further evaluation and coordination with the Minnesota State Historic Preservation Officer (SHPO) would be necessary to determine the exact number of potentially eligible structures.

Alternative R-3: Approval of bypass for coal traffic

Three sites containing structures have been identified within the proposed bypass project area. One of these sites would likely be within the proposed right-of-way, the other two would be immediately adjacent to the right-of way. SEA identified and inventoried these sites during a drive-by survey, but they have not been evaluated against the NRHP criteria nor have they received official Minnesota site numbers. It is unknown whether they contain significant intact archeological deposits. All three are historic Euro-American sites and contain one or more structures. No archaeological sites were identified within the right-of-way.

The most significant site, in regards to location, is SHPO Inventory No: OL-HFT-001. This site consists of a historic schoolhouse that is located within the proposed DM&E railroad right-of-way and would likely be removed during construction. The remaining two sites (ST-ONA-003 & "Log House") are located approximately0.13 of a mile outside of the railroad right-of-way. However, there is a remote possibility that material scatter from these two sites could extend into the project area. The first of these is SHPO Inventory No: ST-ONA-003. This site consists of at least two historic structures that have been identified and inventoried by archaeologist due to the specific historic design elements of the house structure located on the site. The second of these sites is listed on the Minnesota Historic Properties Inventory Form as simply a "Log House" and at this point has no inventory number. This site consists of at least two structures, one of which has historic significance because it contains the remnants of a log structure that has evidently been subsequently remodeled.

None of the sites located within or immediately adjacent to the project area are listed on the NRHP. Neither NRHP eligibility recommendations nor determinations have been made. No prehistoric or historic archaeological sites or historic structures that have been issued official Minnesota State Historic Preservation Office site numbers are presently identified, inventoried, or documented as being located within the project area. Neither is there any Traditional Cultural Propery (TCP) presently identified within the project area that could be associated with cultural practices or beliefs of any community of the region, Native or Euro-American. However, there are areas with a high probability of containing as yet unrecorded archaeological sites that would be crossed by Alternative R-3. Sites in these areas could contain TCPs which may be eligible for inclusion in the NRHP and could be adversely impacted by railroad construction and operation activities.

As mentioned for Alternative R-1, a list of cultural resources within the existing corridor in Minnesota is found in Section 3.2.15, which includes various railroad structures. No additional impacts to these resources would result from the continued operation of the existing rail line portion of Alternative R-3.

Alternative R-4: Approval of bypass for all rail traffic

Potential cultural resource impacts due to Alternative R-4 would be the same as those described for the bypass portion of Alternative R-3.

3.3.2.15 Socioeconomics

Alternative R-1: No-Action Alternative

No change in the socioeconomic setting of Rochester or Olmsted County would be expected as a result of this alternative. The potential economic benefits of upgraded rail service would not be experienced. No additional jobs associated with the reconstruction of the existing rail line would be experienced. Taxes paid by DM&E would remain at the current level. As mentioned in Section 3.2.1, the Board has indicated that the No-Action alternative could result in DM&E ceasing to be a viable railroad. Should this occur it is unlikely that any other rail carriers would acquire the DM&E system due to its deteriorated condition and limited revenue base. Therefore rail service along the existing system, as well as for shippers in Rochester, would cease.

Alternative R-2: Reconstruction of existing rail line

Within Olmsted County, the unemployment rate was reported at 3.5 percent in 1994 as discussed in Section 3.2.16.1. Construction activities along the DM&E rail line would create 57 two-year jobs directly associated with the railroad and an estimated 32 jobs indirectly associated with the railroad (Table 3.2-26). Local and non-local workers could be hired to fill permanent positions with the railroad. Economic and employment benefits, such as purchase of construction materials from local suppliers and use of local lodging and eating facilities, are described in Section 3.2.16.2. Income from railroad construction work in Olmsted County would total an estimated $9.3 million. This would generate an estimated $1.9 million in sales and use taxes (Table 3.2-28) for Olmsted County. Non-local construction workers would not likely relocate permanently to this community. However, the community would benefit from the income spent by these workers while located in the area.

Construction and operation of an efficient rail service could make the area attractive to new business, increasing economic opportunities in the city, county, and region. Population increases could result due to permanent jobs provided by the railroad and new industries in the project area. Additional workers moving to the area to obtain permanent jobs would increase the demand for housing. Property taxes paid to Olmsted County by DM&E could increase from $100 thousand (1997) to an estimated $1.2 million (Table 3.2.29).

Alternative R-3: Approval of bypass for coal traffic

Because socioeconomic information is based on the county the socioeconomic impacts would be basically the same for Alternative R-3 as those presented for Alternative R-2.

Additionally, land values may increase along the bypass alignment of Alternative R-3 if land is attractive to commercial or industrial developers.

Alternative R-4: Approval of bypass for all rail traffic

Impacts to the socioeconomics of the Alternative R-4 area would be similar to those presented for Alternative R-3.

3.3.2.16 Environmental Justice

Alternative R-1: No-Action

Alternative R-1 would involve continuation at the current level of rail operation through Rochester. The existing DM&E rail line crosses 10 census block groups determined by SEA to meet the criteria for environmental justice. Six of these census block groups are classified as environmental justice due to having a percentage of persons in the census block group at or below the poverty level that was 10 percent or more than the percentage for Olmsted County. Four census block groups are classified as environmental justice due to being more than 10 percent higher than the percentage of minority in Olmsted County. Two census block groups meet both the 10 percent low income rule and the 10 percent minority rule as criteria for environmental justice. No additional impacts would be expected to occur to these communities under Alternative R-1.

Alternative R-2: Reconstruction of existing rail line

Alternative R-2 would cross 10 census block group determined by SEA to meet the criteria for environmental justice. Six of these census block groups are classified as environmental justice due to having a percentage of persons in the census block group at or below the poverty level that was 10 percent or more than the percentage for Olmsted County. Four census block groups are classified as environmental justice due to being more than 10 percent higher than the percentage of minority in Olmsted County. Two census block groups meet both the 10 percent low income rule and the 10 percent minority rule as criteria for environmental justice.

SEA evaluated the impacts of the proposed Alternative R-2 to these environmental justice census block group and compared these impacts to the impacts expected to the non-environmental justice census block groups (Appendix D). SEA's analysis determined that one low income census block group would experience disproportionate impacts due to increased noise. Disproportionate impacts would occur at all operating levels (20 MNT, 50 MNT, and 100 MNT).

Alternative R-3: Approval of bypass for coal traffic

Alternative R-3 would not cross any census block groups determined by SEA to meet the criteria for environmental justice, therefore no impacts to such communities would occur.

Alternative R-4: Approval of bypass for all rail traffic

Alternative R-4 would not cross any census block groups determined by SEA to meet the criteria for environmental justice, therefore no impacts to such communities would occur.

3.3.2.17 Recreation

Alternative R-1: No-Action Alternative

Because no new reconstruction, construction, or changes in operations would occur with this alternative, no impacts to recreational opportunities, above those currently occuring, would result from this alternative.

Alternative R-2: Reconstruction of existing rail line

Reconstruction of the existing DM&E rail line could disturb people using three recreational multi-use trails located in downtown Rochester. The Rochester Downtown Rivers Trail forks at the DM&E Zumbro River bridge. The trail could be impacted during reconstruction of the bridge if a temporary trail closure at this point would be required. The other fork of the trail runs parallel to the existing rail line where it connects to the Quarry Hill trail. This section of the Downtown Rivers trail would likely experience impacts during the reconstruction portion of the project due to temporary trail closure. During operation, the trail would be impacted by the railroad through increased noise and safety risks associated with faster trains operating on the adjacent rail line. The Cascade Creek Trail is crossed over by the DM&E railroad. Reconstruction of the Cascade Creek bridge could cause the temporary closure of the trail at this location . Upon completion of reconstruction, day to day operations of the rail line would impact the trail by increased noise, detracting from the quiet outdoor experience.

Mayo Field in Rochester is the home of the Northwoods League Rochester Honkers. The leftfield corner of the field is located at 403 East Center, approximately 600 feet south of the existing DM&E rail line. The Northwoods league is a summer baseball league comprised of teams of top college players from the midwest and across the country. Each team is operated like a professional minor league team, giving the players the opportunity to play under conditions similar to major league baseball. The Northwoods League season lasts from June through mid-

August. The Rochester Honkers play 32 home games each season. Games are played on all nights of the week. Most of the Honkers home games during the 2000 season are at 7:05 pm. The average attendance at a Honkers game is 745 fans. Approximately 23,108 fans attended Honkers games during the 1999 season. There are two grade crossings within 0.25 mile of Mayo field, both are to gain access to the Oakwood Cemetary. Increased dust and noise could cause impacts during reconstruction activities. During operation, horn noise and safety concerns from passing trains could have an impact on home games.

Alternative R-3: Approval of bypass for coal traffic

The area described for the southern bypass portion of Alternative R-3 around Rochester is predominately rural. Recreational activities would include fishing, hunting, snowmobiling, and camping. Potential impacts to these activities would be similar to those explained in Section 3.2.18. During construction, recreational activities occurring in close proximity to the new right-of-way would be impacted by noise, fugitive dust, and general disturbances associated with heavy construction. The operation of a new rail line through previously undisturbed areas could cause a decrease in the overall quality of the outdoor experience.

No additional impacts to recreation opportunities along the existing rail line (primarily trail use) would result from this portion of Alternative R-3.

Alternative R-4: Approval of bypass for all rail traffic

The construction of a bypass would create potential impacts to various recreational activities as described above for the bypass portion of Alternative R-3.

3.3.2.18 Aesthetics

<u>Impacts to Wild and Scenic Rivers</u>

There are no wild and scenic rivers within the reconstruction project or the new build project

<u>Impacts to Viewsheds/scenic values</u>

Alternative R-1: No-Action Alternative

No change in the present scenic value of the existing rail line would occur as a result of this alternative.

Alternative R-2: Reconstruction of existing rail line

Much like the other Minnesota towns which the DM&E railroad currently passes through, the town of Rochester is noted for its small town charm. The atmosphere of the City of Rochester currently includes the presence of an operating railroad. The reconstruction of the DM&E railroad through town could create visual impacts as the work is in progress due to the presence of construction equipment. These would be considered a temporary impact during the several weeks of reconstruction. During the operation of the new railroad the appearance of the rail line would be changed from that of a deteriorated rail line to a more kept, modern facility. Additionally, there are those who enjoy watching trains that would seek out opportunities to do so.

Alternative R-3: Approval of bypass for coal traffic

Construction of an approximately 34 mile bypass through rural Olmsted County, Minnesota could create a noticeable visual contrast to the existing landscape. During the construction portion of the project, the scenery would be temporarily impacted by the site of heavy equipment and earth moving activity. After the completion of construction, the right-of-way would be vegetated and the visual contrast would be reduced. However, the site of moving trains and the raised rail bed where none previously existed could be seen as a visual intrusions by some. Bridges and culverts, new rail and ballast could cause visual impacts by breaking up the natural setting and adding a very unnatural element to the scenery. However, as stated in Section 3.2.19.2, these structures would eventually weather, allowing them to better blend into the surrounding landscape.

The scenic value of the existing rail line would not be changed from its current condition by this alternative.

Alternative R-4: Approval of bypass for all rail traffic

Visual affects created by this alternative would be the same as those described for the bypass portion of Alternative R-3.

<u>Summary</u>

The following, Table 3.3-25, provides a summary of the potential impacts of each of the evaluated Mankato Alternatives.

Table 3.3-20
Rochester Alternative
Impact Summary

Feature	Alternative			
	R-1	**R-2**	**R-3**	**R-4**
LENGTH OF ROUTE IN MILES	23.3	23.3	57.4	34.1
MILES OF REBUILD	0	23.3	23.3	0
MILES OF NEW CONSTRUCTION	0	0	34.1	34.1
PRIME FARMLAND				
Acres Converted to Rail line Right-Of-Way	0.0	0.0	606.0	606.0
LINEAR LAND USE				
Agricultural				
Linear Miles Adjacent To Rail line	7.9	7.9	67.9	60.0
Acres Converted To Rail line Right-Of-Way	0.0	0.0	723.3	723.3
Residential	1.7	1.7	1.7	0.0
Linear Miles Adjacent To	0.0	0.0	0.0	0.0
Acres Within Right-Of-Way				
Business and Industrial	5.9	5.9	6.1	0.2
Linear Miles Adjacent To	0.0	0.0	2.4	2.4
Acres Converted to Right-Of-Way				
Public Lands	1.9	1.9	1.9	0.0
Linear Miles Adjacent To	0.0	0.0	0.0	0.0
Acres Converted to Right-Of-Way				
WATER RESOURCES				
Stream Crossings				
Perennial	7	7	15	8
Intermittent	8	8	36	28
Wetlands				
Acres Within Right-Of-Way	25.5	25.5	78.7	53.2

Table 3.3-20
Rochester Alternative
Impact Summary

Feature	**Alternative**			
	R-1	**R-2**	**R-3**	**R-4**
BIOLOGICAL RESOURCES				
Pasture				
Linear Miles Adjacent To	4.7	4.7	4.7	0.0
Acres Converted to Right-Of-Way	0.0	57.0	57.7	0.0
Woodlands				
Linear Miles Adjacent To	20.8	20.8	25.9	5.1
Acres Converted to Right-Of-Way	0.0	252.1	61.8	61.8
Cropland				
Linear Miles Adjacent To	4.9	4.9	64.9	60.0
Acres Converted to Right-Of-Way	0.0	59.4	727.3	727.3
TOTAL GRADE CROSSINGS				
U.S. Highways	0	0	0	0
State Highways	0	0	1	1
County, City and Other	27	27	60	33
DISTANCE TO NEAREST CHURCH	500 feet	500 feet	500 feet	2,500 feet
DISTANCE TO NEAREST HOSPITAL	500 feet	500 feet	500 feet	32,000 feet
SCHOOL BUS CROSSINGS PER DAY	373	373	376-378	3-5
HOMES WITHIN 500 FEET	601	601	608	7
HOMES RELOCATED	0	0	0	0
HOMES WITHIN 100 FEET	32	32	32	0
MAXIMUM NOISE RECEPTORS 65/ 70 dBA L_{dn}	1,625 / 712	3,594 / 1,739	1,707 / 739	97 / 30

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3.4 OWATONNA ALTERNATIVES

DM&E has applied to the Board for authority to reconstruct their existing rail line and construct and operate a new rail line connection at Owatonna, Minnesota. This new rail line would connect the existing DM&E rail line that extends east-west through Owatonna with the north-south I&M Rail Link (I&M) rail line. DM&E has proposed three alternatives to make the connection to the existing I&M rail line. This connection would allow DM&E to access markets to the north and south. The following compares the potential impacts that would be expected to occur as a result of these various project alternatives at Owatonna. These alternatives include the No-Action Alternative and various alternative routes for connecting the two rail carrier's systems.

Alternative O-1: No-Action Alternative

Alternative O-1, No-Action Alternative, would be the denial by the Board of granting DM&E authority to construct a rail line extension into the Powder River Basin. Under this alternative, DM&E would continue to operate as present. None of the potential impacts associated with rebuilding the existing rail line and operating increased numbers of trains would occur. The Board, in its December 10, 1998 decision, indicated the No-Action alternative could result in DM&E ceasing to be a viable railroad. Should this occur, it is unlikely another rail carrier would acquire the DM&E system, either whole or the portion serving Owatonna. Therefore, rail service in Owatonna would cease. Owatonna is a vibrant, growing community with a broad economic base. Rail service currently benefits two shippers in the community and rail jobs account for a small percentage of the jobs and population within the community. Loss of rail service would have minimal impacts to the community. However, these impacts would likely be minimal.

Action Alternatives

Several Action Alternatives are available for Owatonna. Each of these alternatives is described in detail in Chapter 3 and summarized below.

Alternative O-2: Reconstruction of existing rail line

Alternative O-2 would involve the Board granting DM&E approval to construct and operate new rail facilities into the PRB, but denying it authority to construct and operate a connecting track with the I&M rail line. Under this alternative, DM&E would be anticipated to rebuild its existing rail line through Owatonna, approximately 9.5 miles, but would not construct a connection with I&M.

Alternative 0-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Alternative O-3 would include the reconstruction of approximately 9.5 miles of existing DM&E rail line through Owatonna along with the new construction of approximately 2.9 miles of rail line southeast of town to connect the existing DM&E rail line to the existing I&M rail line.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Alternative O-4 would include the reconstruction of approximately 9.5 miles of existing DM&E rail line and the new construction of a 1.7 mile rail line connection to the existing I&M rail line. This connection is east of Owatonna, but north of the proposed Alternative O-3 connection.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Under this alternative, DM&E would reconstruct an existing connection to the I&M line at a point where the two lines converge in Owatonna. All construction activities would occur within the existing rail right-of-way.

The following discusses potential impacts of the Owatonna Alternatives by environmental resource. Table 3.4-16 compares the potential impacts of each alternative found at the end of this section. This table is referred to throughout this section.

3.4.1 CLIMATE

No impacts to climate would occur as a result of any of the project alternatives.

3.4.2 TOPOGRAPHY

Alternative O-1: No-action Alternative

The topography of the project area experienced changes due to the original construction of the existing line at the time of construction. Areas of low elevation would likely have been filled using material cut from areas of higher elevation. The terrain surrounding the existing rail line appears to be reasonably flat, therefore the landscape of the area would have experienced only subtle changes during the original construction.

Alternative 0-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Alternative O-3 would include the reconstruction of approximately 9.5 miles of existing DM&E rail line through Owatonna along with the new construction of approximately 2.9 miles of rail line southeast of town to connect the existing DM&E rail line to the existing I&M rail line.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Alternative O-4 would include the reconstruction of approximately 9.5 miles of existing DM&E rail line and the new construction of a 1.7 mile rail line connection to the existing I&M rail line. This connection is east of Owatonna, but north of the proposed Alternative O-3 connection.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Under this alternative, DM&E would reconstruct an existing connection to the I&M line at a point where the two lines converge in Owatonna. All construction activities would occur within the existing rail right-of-way.

The following discusses potential impacts of the Owatonna Alternatives by environmental resource. Table 3.4-16 compares the potential impacts of each alternative found at the end of this section. This table is referred to throughout this section.

3.4.1 CLIMATE

No impacts to climate would occur as a result of any of the project alternatives.

3.4.2 TOPOGRAPHY

Alternative O-1: No-action Alternative

The topography of the project area experienced changes due to the original construction of the existing line at the time of construction. Areas of low elevation would likely have been filled using material cut from areas of higher elevation. The terrain surrounding the existing rail line appears to be reasonably flat, therefore the landscape of the area would have experienced only subtle changes during the original construction.

Alternative O-2: Reconstruction of existing rail line

Any impacts to topography associated with rail line construction or reconstruction activities likely occurred when the rail line was originally constructed as discussed above. No further impacts to topography are expected to result from this alternative. Reconstruction of the existing line would not likely change the topography of the project area. Where the existing DM&E rail line crosses three streams and the Straight River, some minor alterations in stream beds and banks could be required during the reconstruction of the existing rail line. However, no changes would be expected to occur to the overall landscape or drainage patterns due to these minor alterations.

Alternative 0-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Potential topographic impacts resulting from the construction of this alternative would include the localized channelization of two intermittent streams, one perennial stream, and the Straight River, which are currently crossed by the existing rail line. No streams or drainage would be crossed by the proposed connecting track. The new construction portion of Alternative O-3 would create minor changes to the existing topography due to cut and fill required for construction of the rail bed. However, the topography along the new construction portion of Alternative O-2 is generally flat to gently rolling. Any cuts or fills required would be minimal and not expected to significantly change local topography.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

The reconstruction and new build portions of this alternative could create impacts due to localized channelization of three perennial streams (existing rail line), the Straight River (existing rail line), and one intermittent drainage (new construction). Limited cuts and fills would result in only minor localized changes in the landscape and drainage patterns.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail right-of-way.

3.4.3 GEOLOGY AND SOILS

3.4.3.1 Soils

Alternative O-1: No-action Alternative

Because no new construction or changes in operations would occur, no impacts to soils are expected to result from this alternative.

Alternative O-2: Reconstruction of existing rail line

The reconstruction of the existing DM&E rail line has the potential to disturb and impact the soil within the railroad right-of-way as described in Section 3.2.5.3. Most of the impacts to soil associated with this alternative would occur during the construction portion of the project and would include soil loss due to erosion, compaction, and loss of productivity from heavy equipment, and the mixing of soil profiles. Impacts resulting from the operation of the railroad would be generally associated with accidental spills of fertilizer, fuel, and oil, similar to those described in Section 3.2.5.3.

The construction of this alternative would have no affect on prime farmland. As stated earlier in this chapter, this land was converted to railroad right-of-way many years ago and is no longer available for agricultural production. In the unlikely event construction activities are required outside the rail line right-of-way, prime farmland could be impacted. Impacts would include soil compaction, erosion, and mixing. These could result in reduced soil productivity. However, construction activities would be primarily restricted to the existing right-of-way and any impacts would be incidental.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

The potential impacts resulting from this alternative would include those described above for the existing rail line portion of this alternative. Additionally, the new construction portion of Alternative O-3 would impact areas currently not used for railroad activities. Approximately 70.3 acres of soil, all classified as prime farmland, would be disturbed during construction of the new connecting track and incorporated into rail line right-of-way. The primary soil types in the area of the I&M connection are Madilia silty clay loam, Webster clay loam, and Canisteo clay loam, depressional. Madilia silty clay loam is wet, the water table is near the surface and requires drainage. Webster soils are level, poorly-drained soils. Webster soils are suitable for crop production when ground water is drained. Canisteo clay loam, depressional soils are very wet with the water table reaching the surface of the soil. A high water table and wetness would be the predominate limiting factors in this region, therefore erosion would not likely be an issue. Use of heavy equipment could cause soil compaction and mixing, changing the character of the soil and decreasing its productivity. However, much of this area is farmed and the soils are regularly disturbed during farming activities. Additionally, vegetative cover is generally limited to the growing season, with crop stubble or tilled ground being present in the winter, early spring, and late fall. As construction activities would be confined to the construction right-of-way, only soils within the right-of-way would be impacted. These soils would be permanently within the rail line right-of-way and would not be available for other uses including agriculture.

Impacts caused by the operation of the rail line would generally be associated with accidental spills. Any releases of fuels or other substances could impact soils as described in Section 3.2.5.3.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Impacts created as a result of construction of this alternative would be similar to those described above for Alternative O-3. However, because the new construction would be shorter in length, only approximately 41.2 acres of soil would be impacted. New rail line construction for Alternative O-4 would result in the permanent conversion of approximately 41.2 acres of prime farmland to railroad right-of-way. Soils types in this region are similar to those described for the new rail line construction area of Alternative O-3.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Because Alternative O-5 uses only the existing rail line right-of-way, construction of this alternative would have the same impacts to soils as described for Alternative O-2.

3.4.3.2 Paleontological Resources

Paleontological resources may occur scattered throughout the Owatonna project area. Any such resources occurring along the existing rail line right-of-way were likely destroyed during initial construction of the rail line. The limited earthwork required for reconstruction of the existing rail line would not likely disturb any paleontological resources. Additionally, the deep soils in the project area and scattered nature of these resources make it unlikely they would be encountered within the construction right-of-way for either connecting track.

3.4.4 LAND USE

The land uses were categorized as residential, business, public lands, and agricultural. Land use on both sides of the existing DM&E rail line was measured. Land being used for roads and highways was not included. Therefore, the total lengths of these land use types may not add up to twice the length of each alternative.

3.4.4.1 Agriculture

Alternative O-1: No-action Alternative

No impacts to agricultural land would result from this alternative.

Alternative O-2: Reconstruction of existing rail line

The reconstructed, existing DM&E rail line would be adjacent to approximately 6.1 miles of cropland. Potential impacts to agricultural lands would be similar to those discussed in Section 3.2.6.1. They would generally include soil disturbance, crop damage, and loss of any cropland encroaching within the railroad right-of-way.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

The reconstruction portion of Alternative O-3 would be adjacent to approximately 6.1 miles of cropland. The 3.2-mile I&M connection portion of this alternative would be adjacent to an additional 6.2 miles of agricultural land. Approximately 70.3 acres of agricultural land would become railroad right-of-way. If construction occurred during the growing season, crops within the right-of-way could be lost. Damage to adjacent crops could also occur. Potential impacts to adjacent agricultural land would be similar to those discussed in Section 3.2.6.1.

During construction and operation of the new connection rail line, area farmers could be affected by reduced access to fields and safety concerns. The proposed rail line would cross numerous agricultural fields, resulting in portions of those fields being located on opposite sides of the rail line from the farmer's headquarters. Access to these areas would be limited to existing roads or, if installed, equipment crossings of the proposed rail line. During operation of the project, farmers would be required to either drive equipment on local roads, crossing the proposed rail line at public grade crossings to access these fields, or cross the proposed rail line at unprotected private crossings. Under both scenarios, farmers would experience increased inconvenience and reduced safety. Farmers would be required to cross railroad tracks at unprotected crossings to move farm machinery or travel on roadways with large, slow moving farm machinery which could create a safety hazard to themselves, motorists traveling on the same roadways, and operating trains and their crews. In some cases, the size of the field on one side of the proposed rail line could be too small to economically continue to farm. These lands could be sold to adjacent farmers and consolidated with other existing fields, or taken out of production and left fallow. Removal from production would decrease the available land and production of these farms, reducing farm income.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

The reconstruction portion of Alternative O-4 would be adjacent to approximately 6.1 miles of agricultural land. The 1.7-mile I&M connection would be adjacent to approximately 3.2 miles of agricultural land which would result in a loss of approximately 41.2 acres of agricultural land. Impacts would be similar to those discussed for Alternative O-3, only less agricultural land would be lost to railroad right-of-way.

Construction and operation of the new connecting track would have impacts similar to those described for the Alternative O-3 connecting track. However, impacts to farmers would be less for this alternative due to less agricultural land being affected.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of this Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.4.2 Residential

The potential impacts to residential land addressed in this section pertain to potential residential relocations, removal of suitable land for residential development, and the general inconvenience of having a railroad near a home. More detailed evaluation of issues such as noise, safety, and air quality are addressed later in this section.

Alternative O-1: No-action Alternative

No additional impacts to residential lands are expected to result from this alternative because there would be no new construction or changes in operations.

Alternative O-2: Reconstruction of existing rail line

Approximately 1.5 miles of residential land was identified adjacent to the existing railroad. Impacts to residential lands that would result from the reconstruction of the existing rail line would likely be temporary, limited to the several days required for reconstruction near these residential areas. These impacts would include increased noise, dust, and traffic delays at road crossings. Based on an anticipated increase in rail traffic, the operation of the rebuilt rail line could cause nearby residents to experience an increase in railroad noise and vibration as described in Section 3.2.6.2

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection.

Implementation of this alternative would have impacts to residential land use similar to Alternative O-2. The new construction portion of this alternative would not cross any lands designated as residential. However, areas adjacent to the proposed alignment are experiencing recent development for rural residences on large lots. Construction of the connecting track may impact the development of these areas for rural residences, making them less desirable locations for a residence due to noise and other impacts related to rail operations.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

The potential impacts of Alternative O-4 would be similar to those of Alternative O-3. However, the new construction portion of Alternative O-4 would likely have less impact on rural residential development due to its shorter length, closer proximity to Owatonna, and the limited area between the I&M rail line and U.S. Highway 14 where the new connecting track would be constructed.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.4.3 Business and Industrial

Business and industrial land use includes any land areas that contain shops, store fronts, manufacturing facilities, and other places of commerce. Section 3.2.6.3 describes impacts that could occur to commercial uses, including increased noise, dust, safety concerns, and traffic delays.

Alternative O-1: No-action Alternative

No additional impacts to business and industrial lands are expected to result from this alternative because no new construction or changes in operation would occur.

Alternative O-2: Reconstruction of existing rail line

Alternative O-2 would be adjacent to approximately 3.4 miles of business or industrial land. These businesses may experience a period of inconvenience due to increased noise, dust, reduced customer access and safety concerns while the railroad is being reconstructed, particularly those which are very near the train tracks. Such impacts are explained further in Section 3.2.6.3.

Operation of a rebuilt DM&E rail line would offer improved rail service for the Owatonna area. Existing businesses and industries not currently utilizing rail transportation may be enticed to convert some of their transportation needs from truck to rail. Existing shippers (Owatonna Concrete Products and Benson Quinn Company) would receive improved rail service, potentially making them more efficient, competitive, and, subsequently, profitable. Adequate rail service may entice new businesses to locate in Owatonna, providing additional opportunities for growth in this already vibrant community.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

There are no industrial facilities or businesses adjacent to the alignment of the proposed connecting track. Therefore, the only construction impacts of Alternative O-3 on industrial or business land use would be the same as those of Alternative O-2.

Operation of the rebuilt existing DM&E rail line and the connection track to I&M may create a desirable location for industrial development southeast of Owatonna. The area would offer rail access east and west on the DM&E and north and south on the I&M. Highway access would be available on U.S. Highways 14 and 218, with nearby access to Interstate 35. The generally flat, undeveloped nature of the area would provide abundant area to develop additional businesses and industrial facilities.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

The potential impacts of this alternative would be similar to those described for Alternative O-3. However, construction of the new connecting track proposed for this alternative would likely result in a less desirable location for future industrial or business development as the shorter connecting rail line distance and proximity of U.S. Highways 14 and 218 limits the space available to construct such facilities. However, the area would still provide access to the same rail and highway infrastructure.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.4.4 Minerals and Mining

There are no known mineral or mining operations that would occur within the existing or proposed rights-of-way for any of the proposed Owatonna alternatives. However, based on U.S.G.S. topographic maps, there are gravel pits near the project area. The exact operating status of these gravel pits is not known, but any gravel or rock quarry near the project area could benefit from the reconstruction and construction activities associated with this project. Gravel and ballast would be required in large amounts during the construction process, and local sources would likely be sought, potentially leading to expansion of existing operations and possibly the opening of new operations.

3.4.4.5 Public Services

Alternative O-1: No-action Alternative

Because no new construction or changes in operation would occur, no additional impacts to public services are expected to result from this alternative.

Alternative O-2: Reconstruction of existing rail line

The existing DM&E rail line through Owatonna passes within approximately 0.2 mile of a church, approximately 0.9 miles of a hospital, and approximately 0.2 miles of a school. Impacts to these public facilities would include increased noise, dust, traffic delays, and safety concerns. These issues are addressed individually in this Sections 3.4.2.12, 3.4.2.13, 3.4.2.18, and 3.4.2.19.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

No public facilities are known to occur along the alignment for the I&M connection, therefore impacts to public facilities from this alternative would only affect those along the existing rail line and would be the same as those for Alternative O-2.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

As described above, no public facilities are known to occur along the alignment for the I&M connection, therefore impacts to public facilities from this alternative would be the same as those for Alternative O-3.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only existing rail line right-of-way.

3.4.4.6 Public Lands

Alternative O-1: No-action Alternative

No public lands are crossed by this alternative, therefore no impacts to such lands would occur.

Alternative O-2: Reconstruction of existing rail line

No public lands are crossed or in the vicinity of Alternative O-2. Therefore, no impacts to public lands are anticipated from the construction or operation of this alternative.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

No public lands are crossed or in the vicinity of Alternative O-3. No impacts to public land are anticipated from the construction and operation of this alternative.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

No public lands are crossed or in the vicinity of Alternative O-4. No impacts to public land are anticipated from the construction and operation of this alternative.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.5 WATER RESOURCES

3.4.5.1 Surface Water Impacts

Alternative O-1: No-action Alternative

No new construction or changes in operation would occur with this alternative, therefore no additional impacts to surface waters would result.

Alternative O-2: Reconstruction of existing rail line

The existing DM&E rail line crosses two intermittent streams, one perennial stream, and the Straight River. During construction, increased erosion from disturbed areas adjacent to these waterways and in-stream work for installation of bridges or culverts, could result in increased turbidity and sedimentation. These impacts would generally occur only during reconstruction activities and would be considered temporary. Following completion of reconstruction activities and establishment of ground cover, erosion should be reduced to pre-construction levels. High-flow events should help remove any excess sediment deposited during construction.

In the unlikely event of an accidental derailment during project operation, fuels, lubricants or other chemicals could enter the waterways, degrading water quality. A derailment of coal cars could spill coal into area waterways. Coal is a relatively inert substance and is not generally toxic. However, a spill into a waterway would likely increase water turbidity and sedimentation. Section 3.2.7.1, provides more detailed explanation of potential impacts to surface waters resulting from railway operations. Spraying of herbicides for vegetation control within the right-of-way could provide an opportunity for chemicals to enter surface waters. Overall, however, the likelihood of a derailment and the need to use herbicides would be greatly reduced by the improved condition of the rail line.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Construction of this alternative would potentially impact the streams and rivers discussed for the existing line as well as one additional intermittent stream and a county drainage ditch.

During construction, impacts to surface waters could include increases in TSS resulting in increased turbidity, and sedimentation as discussed in Section 3.2.7.1. Operational impacts would be similar to those discussed for Alternative O-2. The crossing of the county drainage ditch could impact local drainage of surface water if not constructed properly to allow free-flow of water.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Impacts from the construction and operation of this alternative would be similar to those described for Alternative O-3. Alternative O-4 would cross the same streams as the existing rail line and would also have two crossings of the same intermittent stream crossed by Alternative O-3. However, the crossings of this stream for Alternative O-4 would be in different locations than for Alternative O-3.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.5.2 Wetlands

Alternative O-1: No-action Alternative

Because no new construction, or changes in operations would occur, no impacts to wetlands are expected to result from Alternative O-1.

Alternative O-2: Reconstruction of existing rail line

Approximately 3.9 acres of emergent wetlands occur within the right-of-way on the existing rail line through Owatonna. These wetlands would likely experience substantial damage during reconstruction and be lost. As described in Section 3.2.7.2, potential impacts occurring during reconstruction would vary depending on the nature of the activity. Vehicles may be required to travel through wetlands during the reconstruction process. Ground disturbance in the right-of-way and fill activities could affect wetland hydrology by altering drainage patterns. It is likely all wetland within the existing right-of-way would be lost during reconstruction activities.

Wetlands outside the right-of-way could also be impacted. Erosion and runoff from the reconstruction area could result in increased sedimentation in adjacent wetlands, potentially altering their hydrology and vegetation. Construction activities outside the right-of-way could result in disturbance or loss of additional acres of wetlands.

Because most of the wetlands within the railroad right-of-way would be lost during reconstruction, operational impacts to wetlands would be expected to be minor. However, adjacent wetlands could be impacted from runoff of chemicals such as herbicides, lubricants, and fuel that may be present within the right-of-way. However, these would not likely be present in sufficient quantities to have any adverse impact. In the unlikely event of a chemical spill, runoff into adjacent wetlands could result in contamination. However, the limited quantity of chemicals transported by DM&E and the anticipated improvement in rail safety make such an event unlikely. Overall, only limited, if any, impacts to wetlands are anticipated as a result of project operation.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Wetland impacts resulting from this alternative would be the same as those described for the existing rail line. No additional wetlands would be impacted by construction of the connecting track.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Wetland impacts resulting from this alternative would be the same as those described for the existing rail line. No additional wetlands would be impacted by construction of the connecting track.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.5.3 Groundwater

During the construction or reconstruction of any of the Owatonna alternatives, chemicals such as lubricants and fuels, would be present at the construction site. If there were to be an accidental spill of these or any other toxic substance within the right-of-way they could lead to ground water contamination. Operational impacts to groundwater could occur under similar circumstances. In the unlikely event of a derailment resulting in a chemical spill, toxins could find their way into groundwater resources. However, the limited amount of these materials present during construction would likely be insufficient to affect overall ground water quality. The improved condition of the rail line and limited amounts of hazardous materials transported by DM&E would reduce the likelihood that a derailment and spill would occur.

3.4.5.4 Air Quality

The potential affect to air quality would be similar for each alternative differing only in quantity. The amount of emissions during construction is relative to the type of construction and the length of the alternative. New construction would have greater emissions than rail line reconstruction due to more heavy equipment, particularly for earthwork, greater ground disturbance and longer time necessary to complete the work. Longer alternatives would have greater emissions during both construction and operation due to increased construction time and locomotive fuel consumption. Emissions from motor vehicles delayed at grade crossings could contribute to local air quality affects during operation. Air quality impacts were calculated according to the methodology presented in Appendix E. Table 3.4-1 presents gross ton miles for each alternative. Table 3.4-2 presents the anticipated increase in emissions of criteria pollutants for each alternative. SEA also examined the issue of fugitive coal dust and exposure to diesel locomotive emissions. These are discussed in more detail in Section 3.2.8.

Alternative O-1: No-action Alternative

Because no new construction or changes in operations would occur, no additional impacts to air quality are expected to result from Alternative O-1.

Alternative O-2: Reconstruction of existing rail line

This alternative involves the reconstruction of 9.5 miles of existing DM&E rail line. Potential impacts during reconstruction would be similar to those described in Section 3.2.8, and would include fugitive dust from reconstruction activities, and an increase in emissions from operation of reconstruction equipment and vehicles delayed at crossing during reconstruction delays.

Following reconstruction of the existing rail line, the operation of the rebuilt rail line would result in a overall increase in emissions in the project area. The estimated amounts of locomotive emissions produced by this alternative are compared to EPA's major source thresholds in Table 3.4-2. Higher train speeds would be expected to decrease the amount of time that vehicles would have to wait at grade crossings. This would decrease the time a crossing is blocked, reducing the number of vehicles waiting, thereby decreasing the amount of emissions from vehicles. In addition, shorter crossing delays over the entire day would result in many minor increases in vehicle emissions throughout the day, rather than a few more significant increases.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Potential impacts from the reconstruction of the existing rail line would be the same as those discussed for Alternative O-2. Potential air quality impacts from the construction of the connecting rail would include fugitive dust from construction activities, and emissions from equipment and vehicles delayed at crossings.

Operation of this alternative would produce increased locomotives emissions as presented in Table 3.4-1. This alternative contains a 2.9 mile connection with the I&M rail line. Trains operating over the connection would generate additional emissions in the county and north bound trains would also generate increased emissions through Owatonna.[1] This additional length would be expected to increase the amount of locomotive emissions as well as the vehicular emissions generated from delayed vehicles at crossings. Alternative O-3 has three more grade crossings than Alternative O-2. Vehicles waiting at these grade crossings would contribute to the level of air emissions. No average daily traffic (ADT) information is available for crossings on the I&M connection, but are expected to be minimal due to the rural nature of the area.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Potential impacts of this alternative would be similar to those stated for Alternative O-3. However, the length of the connecting rail line for the I&M connection would be shorter thereby resulting in less construction dust, equipment, locomotive, and vehicular emissions than what would be expected by the longer Alternative O-3 connection. Alternative O-4 has two more grade crossings than Alternative O-2 and one less than O-3. No ADT information is available for crossings on the I&M connection, but it is expected to be minimal due to the rural nature of the area.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

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[1] DM&E has proposed a connection to interchange rail traffic with I&M. While it is expected some rail traffic would use this interchange, no estimates of rail traffic are available. Therefore, locomotive emissions from use of this connection have not been quantified.

Table 3.4-1
Alternative Operations Data for Owatonna, Minnesota

Alternative	Length (miles)	Fuel Fac. GTM/gallon	Number of Trains	Gross Tons/year	Gross-ton Miles (GTM)
O-1	9.5	993.8	3	8,817,165	83,763,067.50
O-2	9.5	993.8	11 21 37	32,329,605 72,067,118 134,539,615	307,131,247.5 684,637,621.0 1,278,126,342.5
O-3	9.5 existing	993.8	11 21 37	32,329,605 72,067,118 134,539,615	307,131,247.5 684,637,621.0 1,278,126,342.5
	2.9 new		N/A	N/A	N/A
O-4	9.5 existing	993.8	11 21 37	32,329,605 72,067,118 134,539,615	307,131,247.5 684,637,621.0 1,278,126,342.5
	1.7 new		N/A	N/A	N/A
O-5	9.5 existing	993.8	11 21 37	32,329,605 72,067,118 134,539,615	307,131,247.5 684,637,621.0 1,278,126,342.5

Table 3.4-2
Emissions Levels of Proposed Alternatives for Owatonna, Minnesota

Alternative	Number of Trains	Emissions Levels - Tons Per Year (TPY)											
		HC (µg/m³)		CO (µg/m³)		NO_X (µg/m³)		SO_2 (µg/m³)		PM_{10} (µg/m³)		Pb (µg/m³)	
		Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold	Increase	Threshold
O-1	3	N/A	100	N/A	100	N/A	100	N/A	100	N/A	100	N/A	0.6
O-2, O-3, O-4 and O-5	11	2.45	100	6.59	100	39.27	100	4.12	100	1.66	100	0.000134	0.6
	21	6.60	100	17.73	100	**105.63**	100	11.09	100	4.47	100	0.000362	0.6
	37	13.12	100	35.24	100	**209.97**	100	22.05	100	8.88	100	0.000721	0.6

HC-Hydrocarbon CO-Carbon Monoxide PM_{10}- Particulate Matter (less than 10 microns in diameter) µg/m³- micrograms per cubic meter
SO_2-Sulfur Dioxide No_x- Oxides of Nitrogen Pb- Lead * number in bold indicate increase is greater than EPA threshold.

3.4.6 NOISE AND VIBRATION

3.4.6.1 Noise

The construction, reconstruction, and operation of the existing DM&E rail line through the City of Owatonna would result in an increase in rail noise and vibration. Section 3.2.9, provides a description of noise sources associated with rail line reconstruction and operation such as construction equipment, wayside noise, and locomotive horn sounding. SEA calculated the distance (contour) from the rail line at which the average daily noise level (L_{dn}) would be equal to 65 decibels (dBA) and 70 dBA during project operation. This distance was calculated for the existing level of rail line traffic as well as the proposed levels of railroad traffic for the proposed alternatives.

Alternative O-1: No-action Alternative

No additional noise impacts are expected to result from this alternative. The number of noise receptors affected by rail noise will remain the same (Table 3.4-3).

Alternative O-2: Reconstruction of existing rail line

Increased noise would occur during reconstruction and operation of Alternative O-2 through Owatonna. A description of impacts, such as noise created by construction machinery and duration of construction activities is presented in Section 3.2.9. The number of noise sensitive receptors impacted by noise during operation of Alternative O-2 would increase as rail traffic increases. Table 3.4-11 shows the number of noise sensitive receptors exposed to average daily noise levels of 65 dBA and 70 dBA during operation of the existing rail line at the levels of rail operation SEA evaluated.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Increased noise would occur during reconstruction and operation. A description of impacts, such as noise created by construction machinery is presented in Section 3.2.9. The only noise sensitive receptors affected by the O-3 Alternative are those shown in Table 3.4-3 for the existing rail line. No additional noise sensitive receptors along the connecting track would experience L_{dn} levels of 65 or 70 dBA due to operation of this alternative.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

As described above, increased noise would occur during reconstruction and operation. A description of impacts, such as noise created by construction machinery is presented in Section 3.2.9. Noise impacts resulting from this alternative would be the same as those determined for Alternative O-2. No additional noise receptors are expected to experience L_{dn} levels of 65 dBA or 70 dBA due to this alternative (Table 3.4-3).

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

Table 3.4-3
Owatonna Alternatives
Number of Noise Sensitive Receptors - 65 dBA/70 dBA

Operation Level and Location	Wayside	Wayside/Horn	Horn	Total
Alternative O-1: No-action				
Steele	**10/6**	**62/19**	**586/314**	**658/339**
Owatonna	10/6	56/18	570/294	636/318
Alternatives O-2, 3, 4, & 5				
11 trains				
Steele	**10/6**	**65/22**	**587/317**	**662/345**
Owatonna	10/6	59/21	571/297	640/324
21 trains				
Steele	**11/8**	**126/44**	**741/401**	**878/453**
Owatonna	11/8	108/43	732/381	851/432
37 trains				
Steele	**26/15**	**201/83**	**1,016/577**	**1,243/675**
Owatonna	25/15	182/75	1,003/563	1,210/653

3.4.6.2 Vibration

Operation of unit coal trains over any of the Owatonna alternatives would have the potential to cause an increase in ground vibration. No vibration impacts are expected due to association with direct rail line reconstruction and construction. Project operation would likely result in an increase in ground vibration above that currently experienced from existing DM&E trains and rail traffic due to increased train weights, lengths, and speeds. Structures located along the existing rail line would experience varying degrees of vibration from rail road operations. SEA estimated that structures within 100 feet could be damaged due to increased vibration along each of the project alternatives. Numerous additional structures, those between 101 and 200 feet, would be subjected to nuisance levels of vibration. However, under current conditions, these structures likely experience some level of vibration from existing train operations. Table 3.4-4 provides a comparison of the number of structures along the various alternatives that could experience impacts from ground vibration resulting from the project. Potential impacts to sensitive equipment are discussed for each alternative.

Alternative O-1: No-action Alternative

There is a total of 377 structures within 400 feet of the existing rail line, 27 within 100 feet, 82 between 101 and 200 feet, and 268 between 201 and 400 feet (Table 3.4. 4). Because no changes in operation would occur, impacts to these structures from vibrations are expected to remain the same as a result of Alternative O-1.

Alternative O-2: Reconstruction of Existing Rail Line

There are 27 structures located within 100 feet of the existing rail line. There are 82 structures located between 101 and 200 feet of the existing rail line, and 268 located between 201 and 400 feet (Table 3.4-4). There are no known structures along this alternative that contain sensitive equipment that could be impacted by railroad caused vibration.

Alternative O-3: Reconstruction of Existing Rail line with 2.9 mile I&M connection

Alternative O-3 would have 27 structures located within 100 feet of the existing rail line, 82 between 101 and 200 feet, and 269 between 201 and 400 feet (one additional structure in the 201-400 foot range than Alternative O-2). There are no known structures that contain sensitive equipment on this alternative.

Alternative O-4: Reconstruction of Existing Rail line with 1.7 mile connection

Alternative O-4 would have the same number of structures potentially impacted by railroad caused vibration as presented for Alternative O-2, therefore potential impacts for these two alternatives would be the same.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Alternative O-5 would have the same number of structures potentially impacted by railroad caused vibration as presented for Alternative O-2, therefore potential impacts for these two alternatives would be the same.

Table 3.4-4
Owatonna Alternatives
Structures Potentially Impacted by Vibration

Alternative	0-100 feet	101-200 feet	201-400 feet	Total
O-1	27	82	268	377
O-2	27	82	268	377
O-3	27	82	269	378
O-4	27	82	268	377
O-5	27	82	268	377

3.4.7 BIOLOGICAL RESOURCES

3.4.7.1 Vegetation

Distances for vegetation represent the total miles adjacent to both sides of the existing rail line. Thus it is possible to have vegetation of one particular type on one side of the rail line and another type on the opposite side. Acreage amounts include vegetation converted to rail line right-of-way.

Alternative O-1: No-action Alternative

Because no new construction or changes in operation would occur under Alternative O-1, no additional impacts to vegetation are expected.

Alternative O-2: Reconstruction of existing rail line

Alternative O-2 passes adjacent to approximately 1.0 mile of pasture land, 3.3 miles of woodland, and 6.1 miles of cropland. The remainder of this alternative is within Owatonna and was not considered to contain vegetative communities. The overall impacts to vegetation from the reconstruction of the existing line through Owatonna would be similar to those described in Section 3.2.10.1. Disturbance or loss of vegetation would primarily be restricted to vegetation within the existing rail line right-of-way which consists mainly of re-vegetated grasses, shrubs, and trees that have grown up along right-of-way fence lines. Operational impacts would likely include damage or loss due to herbicide use and trimming.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Construction of Alternative O-3 would affect all of the vegetative communities associated with Alternative O-2. Additionally, construction of the I&M connection track would affect an additional 4.2 miles of crop land. Approximately 50.9 acres of crop land would be converted to permanent railroad right-of-way. Following completion of construction, the new right-of-way would be expected to re-vegetate as described in Section 3.2.10.1.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Construction and operation of Alternative O-4 would result in impacts to vegetative communities similar to those of Alternative O-2 with the addition of approximately 3.0 linear miles of cropland. Approximately 36.4 acres of cropland would be converted to railroad right-of-way for the construction of the I&M connection.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.7.2 Wildlife

Alternative O-1: No-action Alternative

Because no new construction or changes in operation would occur under Alternative O-1, wildlife that inhabits the existing rail line right-of-way and the land adjacent to it would not experience any changes as a result of this alternative. Wildlife that uses vegetation within the existing rail line right-of-way for habitat would not experience a loss of habitat as a result of this alternative.

Alternative O-2: Reconstruction of existing rail line

The potential impacts to wildlife associated with Alternative O-2 would be similar to those described in Section 3.2.11, for the rebuild of other portions of DM&E's existing rail line. It is presumed that wildlife species found in the project area have adjusted to the presence of a railroad. Wildlife species that do not tolerate railroad activity would likely already be absent from the area. Temporary impacts associated with human presence, noise, habitat loss, and mortality from construction equipment would likely occur during the reconstruction process. Long term impacts from habitat loss, higher frequency of disturbance from increased rail traffic, and mortality from collisions with more and faster trains would occur throughout the operation of the railroad. However, based on the nearby availability of suitable habitat, and the proven ability to adapt to the presence of passing trains displayed by wildlife currently living within the existing rail line right-of-way, these types of impacts are not expected to be significant to the overall wildlife populations in the project area.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Reconstruction of the existing rail line portion of this alternative would result in the impacts discussed for Alternative O-2. In addition, the new construction portion of Alternative O-3 would require the conversion of approximately 50.9 acres of cropland to permanent railroad right-of-way. Wildlife that currently uses this cropland would be displaced into other areas of similar habitat during construction. Some small mammals and birds could reoccupy the right-of-way after construction and revegetation are complete. Large mammals, such as deer, that occupy the new build project area could experience decreased browsing space and increased occurrence of injury and mortality due to collisions with passing trains as described in Section 3.2.11. Following completion of construction of the connecting track, the right-of-way would become revegetated in grasses, weedy annuals, and small trees. This would provide habitat, particularly cover and nesting areas for wildlife potentially of higher quality than adjacent agricultural areas.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Impacts resulting from the construction of Alternative O-4 would be similar to those described for O-3 with the exception that the amount of habitat loss in the new build portion of the alternative would be less. The new build portion of Alternative O-4 would require the conversion of 36.4 acres of cropland habitat to railroad right-of-way. As described above, wildlife species which currently inhabit this portion of the project area would experience varying degrees of disturbance and impact resulting from the presence of an operating railroad.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.7.3 Aquatic and Fisheries

Alternative O-1: No-action Alternative

Because no new construction or changes in operation would occur under Alternative O-1 that could lead to impacts to fish or other aquatic species, no impacts to these resources are expected to result from this alternative.

Alternative O-2: Reconstruction of existing rail line

The existing DM&E rail line through Owatonna crosses two perennial streams and two intermittent or seasonal streams. Potential impacts to organisms that inhabit particularly the two perennial streams such as fish, mussels, and aquatic invertebrates would be most noticeable during the construction phase of the project. Increased suspended soil particles in the water resulting from construction site runoff, as well as from direct disturbance to the bottom sediments from construction equipment during placement of bridges or culverts would create a temporary impact on aquatic life. Habitat at crossings could be altered or lost. These impacts as well as operational impacts are explained in Section 3.2.11.4.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Impacts to aquatic life and fisheries from the construction of this alternative would include those described above for the existing rail line Alternative O-2. The new connecting track portion of Alternative O-3 would cross one additional waterway, a drainage ditch. As this waterway is designed to assist drainage of adjacent agricultural areas, construction across it would have minimal impacts to aquatic resources.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Alternative O-4 would cross the same waterway as described for Alternative O-3 (although one intermittent stream on the connecting track would be crossed at different locations than for Alternative O-3) therefore, impacts to aquatic life and fisheries from this alternative would be similar to those described above for Alternative O-3.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.7.4 Threatened and Endangered Species

A complete list of threatened and endangered species for the entire Minnesota project area is described in Section 3.2.11.5. Based on occurrence records and habitat requirements for these species, no impacts to threatened or endangered species are expected to occur as a result of reconstruction of existing rail line or new rail line construction in the Owatonna area.

3.4.8 TRANSPORTATION

During reconstruction and construction, increased use of Federal, state, county, and local roadways by construction vehicles would result in increased wear and potential traffic delays on local roadways. Road or lane closures at grade crossings could slow traffic.

Long term impacts to the transportation system would occur at locations where the proposed project would cross an existing roadway, resulting in a new grade crossing, or where an existing grade crossing would experience increased rail traffic. Such locations would experience delays in vehicular traffic to allow for the passage of trains. The higher the ADT on the roadway and the more frequent the rail traffic, the more significant the traffic impact would become. SEA has determined that roadways with ADTs of less then 5,000 vehicles would have few drivers that experience delays associated with train traffic. SEA evaluates vehicle delay for those crossings with ADTs of 5,000 vehicles or more. SEA categorized crossings based on a level of service. Levels of service ranged from free flowing (A) to severely congested (F) as discussed in detail in Section 3.2.12.

Alternative O-1: No-action Alternative

There are 15 grade crossings along the existing rail line through Owatonna. These grade crossings would not experience construction related delays and detours under Alternative O-1, and no changes in operation such as train size and speed would occur. Frequency and length of delay at grade crossings would remain the same.

Alternative O-2: Reconstruction of existing rail line

All 15 grade crossing along the existing rail line through Owatonna would experience impacts related to reconstruction similar to those described in Section 3.2.11, such as traffic delays, reduced access, and rerouted traffic.

<u>20 MNT</u>

There would be two public crossings, Cedar Avenue and State Avenue, along the existing rail line portion of this alternative with ADT's above 5,000. SEA calculated both crossings would experience a reduction in delay per stopped vehicle due to increased train speeds through these crossings, reducing the time the crossing is occupied by a passing train. The level of service during rail line operation would be A for both train length scenarios (115 rail cars or 6,400 feet, and 135 rail cars or 7,400 feet). The crossings would also experience a reduction in maximum vehicle queue length.

<u>50 MNT</u>

Under the 50 MNT operation level, both public crossings analyzed would experience a reduction in delay per stopped vehicle. The levels of service during rail line operation would be A for the 6,400 feet train scenario and B for the 7,400 feet scenario. The crossings would also experience a reduction in maximum vehicle queue length.

<u>100 MNT</u>

Under the 100 MNT operation level, both public crossings analyzed would experience a reduction in delay per stopped vehicle. The levels of service during rail line operation would be B for the 6,400 feet train scenario and C for the 7,400 feet scenario. The crossings would also experience a reduction in maximum vehicle queue length.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Because the anticipated level of rail traffic information for the connecting loops is unknown, the potential impacts to transportation from Alternative O-3 would be considered the same as for Alternative O-2.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Because the anticipated level of rail traffic information for the connecting loops is unknown, the potential impacts to transportation from Alternative O-4 would be considered the same as for Alternative O-2.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.9 SAFETY

As discussed in Section 3.2.12, safety impacts would occur during the reconstruction and construction activities for all alternatives as well as during rail line operation. The SEA analyzed the grade crossings for each Owatonna alternative under the 20 MNT, 50 MNT and 100 MNT operating levels to determine the change in accident frequency for each alternative. Because siding locations affect the safety analysis (as discussed in Section 3.2.12), the Owatonna alternatives were analyzed based on the construction of each new rail line extension alternative (Alternatives B, C, and D discussed in Section 2.2.8, Table 2-6). However, the level of impact for the Owatonna alternatives would be the same for each of these. The following describes the potential safety impacts that could result from the various alternative routes at Owatonna.

Alternative O-1: No-action Alternative

By not rebuilding the existing rail line, DM&E would continue to have one of the worst safety records in the rail industry. The level of safety would remain at the same level or decline as the existing track continues to deteriorate.

Alternative O-2: Reconstruction of existing rail line

The safety concerns described in Section 3.2.13 are similar to what would be expected for Alternative O-2. The existing rail line is 950 feet from the nearest school. The school's proximity to the railroad could increase the likelihood of pedestrian crossings as well as incidents of children playing on and around construction equipment. The existing rail line through Owatonna has 15 grade crossings. Frustration brought on by reconstruction delays could cause motorists to attempt crossings when conditions are not safe, putting themselves and construction crews at risk. Delays at crossings may also result in motorists using alternative routes, increasing traffic on local roads and through neighborhoods unaccustomed to the increased level of vehicle traffic.

The existing DM&E rail line in Owatonna is crossed approximately 294 times by school buses from the Owatonna Bus Company. During reconstruction of the existing rail line, school buses could experience delays at crossings or be required to change their routes to prevent potential conflicts with construction equipment. During operation of this alternative, school buses would likely experience an increase in delay events, but a reduction in delay time at grade crossings. Table 3.4-5 presents the names of grade crossings crossed and the number of times daily they are crossed by school buses. Grade crossings in Owatonna were calculated by SEA to have an increase in accident frequency under all levels of increased rail operations.

Approximately 3,000 feet of Alternative O-2 would be adjacent to the I&M rail line in the town of Owatonna. The proximity to another operating rail line would present additional safety concerns during construction and operation. Construction crews would be exposed to risks during periods when there is rail traffic on the adjacent line. Careful coordination between both railroads would be required to minimize the risk from operating trains during construction.

Under their current operating conditions, DM&E has one of the worst safety records in the railroad industry. The safety of the DM&E railroad would likely improve from its current status following reconstruction of the existing rail line.

<u>20 MNT</u>

A total of three accidents occurred at the grade crossings along Alternative O-2 between 1993 and 1997. SEA's safety analysis showed that for the 15 public highway/railroad grade crossings along Alternative O-2, the predicted increases in accident frequency at the 20 MNT level of operation would range from 0.0006 to 0.002. This translates into a range of increase from one accident every 1,697 years to one accident every 663 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An overall decrease in the accident frequency would occur for Alternative O-2, resulting in a system-wide change in accident frequency of –0.017. This represents a predicted decrease of one accident every 60 years.

<u>50 MNT</u>

SEA's safety analysis showed that the predicted increases in accident frequency at the 50 MNT level of operation would range from 0.002 to 0.01. This translates into a range of increase from one accident every 418 years to one accident every 73 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An overall increase in the accident frequency would occur for Alternative O-2, resulting in a system-wide change in accident frequency of 0.107. This represents a predicted increase of one accident every nine years.

<u>100 MNT</u>

SEA's safety analysis showed that the predicted increases in accident frequency at the 100 MNT level of operation would range from 0.006 to 0.028 This translates into a range of increase from one accident every 156 years to one accident every 36 years, respectively. SEA found these predicted increases to be below the criteria for significance.

An overall increase in the accident frequency would occur due to this alternative, resulting in a system-wide change in accident frequency of 0.224. This translates into an increase of one accident every four years.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Safety issues analyzed for the construction and operation of this alternative would be the same as those described for Alternative O-2. No rail traffic levels for the connecting track are known. Therefore, accident frequency can not be determined for them.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Safety issues analyzed for the construction and operation of this alternative would be the same as those described for Alternative O-2. No rail traffic levels for the connecting track are known. Therefore, accident frequency can not be determined for them.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

Table 3.4-5
School Bus Crossings for Owatonna Alternatives

Alternative	Street Name	Number of Crossings/ day
Alternative O-2	NW 24th Avenue	4
	Park Drive	138
	State Drive	3
	Cedar Street	9
	N. Elm Street	5
	Pine Street	104
	Chestnut Street	5
	Vine Street	4
	Rice Lake Street	13
	SE 34th Avenue	2
	SE 44th Avenue	4
	E. US Highway 14	3
		294 total
O-3	Same as Alternative O-2	294
O-4	Same as Alternative O-2	294
O-5	Same as Alternative O-2	294

3.4.10 HAZARDOUS MATERIALS

Transportation of Hazardous Materials

Neither the construction or operation of any of the proposed Owatonna alternatives would result in increased types or amounts of hazardous materials being transported by DM&E. As stated in Section 3.2.13, the reconstruction of the existing rail line would likely further reduce the potential for an accident involving the release of hazardous substances. The No-Action Alternative (project denial) would not change the potential for release for hazardous substances. The likelihood of such an accident is currently low due to the minimal quantities of such materials transported. However, the poor condition of DM&E's existing rail line increases the likelihood of a derailment.

Hazardous Material Sites

As described in Section 3.2.13, hazardous material sites are places where releases of hazardous materials have been reported to local, state, or Federal authorities. In Steele County, 3 LUST sites are listed (Table 3.1-18). The West Broadway Street Groundwater Contamination Site in Owatonna is listed with CERCLIS and SHWS. DM&E should coordinate with the EPA, Minnesota Pollution control, and the Minnesota Department of Environmental and Natural Resources Protection Agency to determine if contaminated sites occur within the proposed right-of-way.

3.4.11 ENERGY RESOURCES

Transportation of Energy Resources

As discussed in Chapter 1, DM&E plans to provide a more cost-efficient route for PRB coal. Upgrade of the existing DM&E rail line would provide a more cost effective transportation route for PRB coal as discussed in Section 3.2.15. This would help alleviate congestion at the mines and within the PRB which would make transportation of PRB coal more efficient and reliable for all rail carriers serving the mines. With the use of PRB coal projected to increase, this project would help the coal mines to meet the rising demand.

Utilization of Energy Resources

The route DM&E has proposed to expand their rail line into the PRB is designed to be shorter and more efficient than those of existing rail carriers. A more efficient route would make transportation of the coal from the PRB to potential markets more economical, requiring less fuel to transport. Cheaper transportation costs for PRB coal could make it more attractive to utilities currently using other coal sources, increasing the utilization of PRB coal. Utilities currently using PRB coal could continue to use it, however transportation by DM&E would reduce usage of diesel fuel by thousands of gallons per year. Simply stated, alternatives that are shorter in distance utilize less energy resources for coal transport. All of the Owatonna alternatives include approximately 9.5 miles of existing rail line. The connecting loops differ in length making Alternative O-3 the longest alternative with an I&M connection, and O-5 the shortest.

3.4.12 CULTURAL RESOURCES

Alternative O-1: No-action Alternative

Any impacts to cultural resources within the existing rail line right-of-way would likely have occurred when the rail line was constructed over 100 years ago. Because no new construction or changes in operation would occur under this alternative, no additional impacts to cultural resources (including those that are part of the existing DM&E rail system) would result from this alternative.

Alternative O-2: Reconstruction of existing rail line

An evaluation of the known cultural resources that exist within and near the existing DM&E rail line in Minnesota is found in Section 3.2.16. No known archaeological sites have been identified within the existing railroad right-of-way through Owatonna. However, 11 structures associated with the rail line are located within the right-of-way. These structures consist of stone box culverts constructed at or near the time the railroad was constructed. These culverts would likely be damaged or destroyed during the reconstruction of the existing rail line. An explanation of possible impacts to these and other cultural resources is found in Section 3.2.16. It is unlikely that intact cultural resources exist within the disturbed right-of-way.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

The known cultural resources for this alternative would be the same as those for Alternative O-2. No additional cultural resources are known to exist within the proposed right-of-way for the I&M connection. The potential for discovery of additional sites within the new right-of-way is considered low.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

The known cultural resources for this alternative would be the same as those for Alternative O-2. No additional cultural resources are known to exist within the proposed right-of-way for the I&M connection. The potential for discovery of additional sites within the new right-of-way is considered low.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.13 SOCIOECONOMICS

Potential impacts to the socioeconomic characteristics of the Owatonna area would be basically the same for each alternative and would be similar to those described for Steele County (Section 3.2.17.1). A short-term increase in population would be expected to occur during the construction portion of the project. This project would be expected to provide both short-term, and long-term employment opportunities to those living in or near the project area, including Owatonna, in the form of railroad jobs and related support services. DM&E would likely acquire a variety of construction materials and supplies from suppliers and merchants within and near the project area. Businesses that supply materials such as concrete, ballast rock, fencing, lumber, and a variety of other building materials could expect to benefit from increased sales during the construction portion of the project.

DM&E currently pays property taxes. These taxes vary based on the type of facilities within each county and the county's tax assessment rate. Table 3.2-25, provides an estimate of the property taxes DM&E would pay Steele County, under the 40 MNT, and 100 MNT operating scenarios.

3.4.14 ENVIRONMENTAL JUSTICE

Alternative O-1: No-Action Alternative

Alternative O-1 would involve continuation of the status quo for rail operations through Owatonna. The existing DM&E rail line (and UP rail line that bridges the gap in the DM&E system at Owatonna) passes through three census blocks group determined by SEA to meet the criteria for environmental justice. All three census block groups are classified as environmental justice due to having a percentage of persons in the census block group at or below the poverty level that was 10 percent or greater than the percentage for Steele County. Additionally, one census block group also meets the criteria for classification as environmental justice due to being more than 10 percent higher than the percentage of minority in Steele County.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.13 SOCIOECONOMICS

Potential impacts to the socioeconomic characteristics of the Owatonna area would be basically the same for each alternative and would be similar to those described for Steele County (Section 3.2.17.1). A short-term increase in population would be expected to occur during the construction portion of the project. This project would be expected to provide both short-term, and long-term employment opportunities to those living in or near the project area, including Owatonna, in the form of railroad jobs and related support services. DM&E would likely acquire a variety of construction materials and supplies from suppliers and merchants within and near the project area. Businesses that supply materials such as concrete, ballast rock, fencing, lumber, and a variety of other building materials could expect to benefit from increased sales during the construction portion of the project.

DM&E currently pays property taxes. These taxes vary based on the type of facilities within each county and the county's tax assessment rate. Table 3.2-25, provides an estimate of the property taxes DM&E would pay Steele County, under the 40 MNT, and 100 MNT operating scenarios.

3.4.14 ENVIRONMENTAL JUSTICE

Alternative O-1: No-Action Alternative

Alternative O-1 would involve continuation of the status quo for rail operations through Owatonna. The existing DM&E rail line (and UP rail line that bridges the gap in the DM&E system at Owatonna) passes through three census blocks group determined by SEA to meet the criteria for environmental justice. All three census block groups are classified as environmental justice due to having a percentage of persons in the census block group at or below the poverty level that was 10 percent or greater than the percentage for Steele County. Additionally, one census block group also meets the criteria for classification as environmental justice due to being more than 10 percent higher than the percentage of minority in Steele County.

Alternative O-2: Reconstruction of existing rail line

Alternative O-2 would cross three census block groups determined by SEA to meet the criteria for environmental justice. All three census block groups are classified as environmental justice due to having a percentage of persons in the census block group at or below the poverty level that was 10 percent or greater than the percentage for Steele County. Additionally, one census block group also meets the criteria for classification as environmental justice due to being more than 10 percent higher than the percentage of minority in Steele County.

SEA evaluated the impacts of the proposed Alternative O-2 to these environmental justice census block groups and compared these impacts to the impacts expected to the non-environmental justice census block groups. SEA's analysis determined that two census block groups would experience disproportionate impacts due to increased noise. Disproportionate impacts would occur to one low income census block group at the 20 MNT level of rail operations and to a second low income census block group at the 100 MNT level of rail operation (Appendix D).

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Alternative O-3 would cross the same census block groups determined by SEA to meet the criteria for environmental justice as Alternative O-2. Therefore, potential impacts from this alternative would be the same as those described for Alternative O-2.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Alternative O-4 would not cross any additional census block groups determined by SEA to meet the criteria for environmental justice, therefore potential impacts to such communities would be the same as described for Alternative O-2.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Alternative O-5 would not cross any additional census block groups determined by SEA to meet the criteria for environmental justice, therefore potential impacts to such communities would be the same as described for Alternative O-2.

3.4.15 RECREATION

A variety of recreational opportunities are available in or near the project area. Many of the activities, such as fishing, hunting, camping, and snowmobiling are outdoor oriented. Potential impacts to these and other recreational opportunities in the project area are presented in Section 3.2.18, and include increased noise and dust during construction, reduced safety near tracks, and the general disturbances caused by a moving train.

Alternative O-1: No-action Alternative

Because no new construction or changes in operation would occur under Alternative O-1, impacts to the six parks located within 0.5 mile of the existing rail line, and the Straight River canoeing area would not change. Noise, dust, disturbance from passing trains, and risk of accidents involving trains would remain the same.

Alternative O-2: Reconstruction of existing rail line

Six parks and the Straight River canoeing area are located within ½ mile of the existing rail line. Impacts to these recreational facilities would include increased noise and dust during construction, reduced safety near the tracks, and the general disturbances caused by a moving train. Operation of this alternative could result in decreased use of park facilities.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Because no additional recreational facilities would be adjacent to the connecting tracks, impacts would be the same as those presented for Alternative O-2.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Because no additional recreational facilities would be adjacent to the connecting tracks, impacts would be the same as those presented for Alternative O-2.

Alternative O-5: Reconstruction of existing rail line an reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

3.4.16 AESTHETICS

Impacts to Wild and Scenic Rivers

There are no wild and scenic rivers within the Owatonna area. Therefore, the Owatonna alternatives would have no impact on them.

Viewsheds/Scenic Values

Alternative O-1: No-action Alternative

Because no new construction or changes in operations would occur under Alternative O-1, no changes in the current scenic value are expected to result from this alternative.

Alternative O-2: Reconstruction of existing rail line

The presence of heavy equipment and disturbed earth could detract from the current scenic value of the project area. Visual distractions created by the reconstruction process would be temporary. The rail bed would be rebuilt and reseeded, likely restoring or exceeding the present scenic condition of the existing rail line right-of-way.

Alternative O-3: Reconstruction of existing rail line with 2.9 mile I&M connection

Potential visual impacts created by the rebuild portion of this alternative would be the same as those described for the existing line. The land along the alignment of the I&M connection is rural and sparsely populated. Construction and operation of the I&M connection portion of this alternative would alter the surrounding landscape. The presence of construction equipment and minor cuts and fills during construction of the I&M connection would temporarily distract from the scenic value of the project area. Because the I&M railroad currently exists in the project area, the new connection track would not create a new type of intrusion into the landscape.

Alternative O-4: Reconstruction of existing rail line with 1.7 mile I&M connection

Impacts created by this alternative would be similar to those described for Alternative O-2. However, the new construction would impact only 1.7 miles. It would be closer to town, resulting in less visual intrusion to the rural landscape.

Alternative O-5: Reconstruction of existing rail line and reconstruction of existing I&M connection

Construction of Alternative O-5 would have the same impacts as described for Alternative O-2 due to both alternatives using only the existing rail line right-of-way.

Summary

The following Table 3.4-6, provides a summary of the potential impacts of each of the evaluated Owatonna alternatives.

Table 3.4-6
Owatonna Alternative Impact Table

Feature	Alternative				
	O-1	**O-2**	**O-3**	**O-4**	**O-5**
LENGTH OF ROUTE IN MILES	9.5	12.7	11.2	21.7	12.2
MILES OF REBUILD	9.5	9.5	9.5	9.5	0
MILES OF NEW CONSTRUCTION	0	3.2	1.7	12.2	12.2
PRIME FARMLAND Acres converted to Right-of-way	0.0	76.3	39.0	221.5	221.5
LINEAR LAND USE					
Agricultural					
Linear Miles Adjacent To	6.1	12.3	9.3	28.0	21.8
Acres Converted To Right-of-way	0.0	75.2	38.8	265.2	265.2
Residential					
Linear Miles Adjacent To	1.5	1.5	1.5	1.8	0.3
Acres Converted to Right-of-way	0.0	0.0	0.0	3.6	3.6
Business and Industrial					
Linear Miles Adjacent To	3.4	3.4	3.4	3.4	0.0
Acres Converted to Right-of-way	0.0	0.0	0.0	0.0	0.0
Public Lands					
Linear Miles Adjacent To	0.0	0.0	0.0	0.2	0.2
Acres Converted to Right-of-way	0.0	0.0	0.0	0.0	0.0

Table 3.4-6
Owatonna Alternative Impact Table

Feature	Alternative				
	O-1	**O-2**	**O-3**	**O-4**	**O-5**
WATER RESOURCES					
Stream crossings					
Perennial	2	2	2	2	2
Intermittent	2	2	4	4	2
Wetlands					
Acres Within Right-Of-Way	3.9	3.9	3.9	6.9	3.0
BIOLOGICAL RESOURCES					
Pasture					
Linear Miles Adjacent To	1.0	1.0	1.0	1.0	0.0
Acres Converted to Right-of-way	0.0	0.0	0.0	0.0	0.0
Woodlands					
Linear Miles Adjacent To	3.3	3.3	3.3	4.4	1.1
Acres Converted to Right-of-way	0.0	0.0	0.0	13.3	13.3
Cropland					
Linear Miles Adjacent To	6.1	10.3	9.1	24.7	18.6
Acres Converted to Right-of-way	0.0	50.9	36.4	225.5	225.5
TOTAL GRADE CROSSINGS					
U.S. Highways	1	1	1	1	1
State Highways	0	0	0	0	0
County Roads & Highways	14	14	16	17	14
MILES TO NEAREST CHURCH	0.2	0.2	0.2	0.2	0.2
MILES TO NEAREST HOSPITAL	0.9	0.9	0.9	0.9	0.9
MILES TO NEAREST SCHOOL	0.2	0.2	0.2	0.2	0.2
SCHOOL BUS CROSSINGS	294	294	294	294	294
HOMES WITHIN 500 FEET	207	207	207	207	207
HOMES RELOCATED	0	0	0	0	0
HOMES WITHIN 100 FEET	27	27	27	27	27
MAXIMUM NOISE RECEPTORS 65/70 dBA L_{dn}	658/339	662/345	662/345	662/345	662/345

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3.5 MINNESOTA - STAGING AND MARSHALING YARDS

The impacts created from the construction and operation of the various rail yards are described in this section. Should the No-Action Alternative be chosen, the impacts described for Alternatives B, C, and D would not occur. Impacts are based on the conversion of the present land use at the proposed yard location to rail line right-of-way. The location of yards for each alternative is based on the need for each yard to serve multiple functions, such as inspections, maintenance, fueling, and crew change points. Yards work in conjunction with each other and the placement of sidings and their locations are dependent on the length of the Extension Alternative (B, C, or D), as discussed in more detail in Chapter 2. Because of differences in the lengths of the Extension Alternatives, specific rail yards, designed to perform a particular set of activities, may be located in different locations depending on the Extension Alternative selected. Rail yard locations for one Extension Alternative may not be feasible for another Extension Alternative. Therefore, rail yards are discussed based on their proposed locations for each alternative. When a proposed rail yard location would be the same for more than one alternative, this is indicated. A summary of impacts for each yard is presented in tabular form at the end of each alternative.

3.5.1 PRB EXTENSION ALTERNATIVE - B

The following discusses the potential impacts of the proposed new rail yards, based on their necessary locations for Extension Alternative B.

3.5.1.1 East Staging and Marshaling Yard

3.5.1.1.1 Location

The East Staging and Marshaling Yard (East Yard) would begin approximately 1.0 mile west of Lewiston, Minnesota and end approximately 0.5 mile east of Utica, Minnesota in Winona County. The yard would be located between mile posts 19.7 and 21.8 on the south side of the existing DM&E rail line. The proposed yard would be 600 feet wide and 2.1 miles long, with a total area of approximately 152.7 acres. The East Yard would be designated to be a staging yard for loaded and empty coal trains, a marshaling yard for grain, manifest, and way freight, as well as supporting interchange with Union Pacific Railroad Company (UP), and Canadian Pacific Railroad Company (CP) at Minnesota City. The East Yard may have a small mechanical facility for emergency repairs, as well as refueling facilities for some trains.

3.5.1.1.2 Geology and Soils

The proposed yard between Lewiston and Utica would be constructed in an area containing loess and glacial till deposited over dolomite bedrock. The dominant soil type in the area of the proposed rail yard is Port Byron. Slope of this soil type generally ranges from 1 to 6 percent with average top soil depths of 10 to 16 inches. These soils are at least moderately erodible, especially when exposed. Impacts during construction could include increased erosion and loss of top soil in the proposed rail yard site and any disturbed adjacent areas. Soils would be graded and covered with rail lines, gravel, concrete and asphalt. Approximately 94.0 acres of prime farmland would be converted to use as a rail yard facility. During operation, run-off from the yard or redirected surface water due to impermeable surfaces and structures within the rail yard could cause increased erosion and the formation of gullies in surrounding areas.

3.5.1.1.3 Land Use

Agriculture

Approximately 152.0 acres within the proposed rail yard site are used for agriculture. There are approximately 94.0 acres of prime farmland present within the proposed yard site. The land use would be changed and lost for agricultural production through conversion to a rail yard. A small strip of woody vegetation, approximately 0.7 acre, adjacent to the existing rail line would be cleared. This land would also be converted to railroad use.

Residential

There is no residential land present within the proposed rail yard site. However, 5 residences are within 500 feet of the proposed yard boundaries. These consist of rural farmsteads. Impacts to these residences during construction could include noise, dust, increased road traffic, and vehicle delays associated with the movement of construction equipment and road closures on area roadways. These impacts would be temporary, occurring during construction of the rail yard, which is anticipated to take several months. Nearby residences would experience rail yard noise and inconvenience from road closure during operation of the East Yard.

Commercial

There is no commercial property located within the proposed rail yard site. There are 2 businesses located within 500 feet of the proposed rail yard. Impacts to these businesses could include dust, increased road traffic and vehicle delays associated with the movement of construction equipment and road closures. These impacts are expected to be temporary during construction. Increased noise would occur during construction and operation of the proposed rail yard.

3.5.1.1.4 Water Resources

Surface Water

There are two intermittent streams present within the proposed yard site. These would require realignment or channelization. Impacts to surface water, as described in Section 3.2.7.1 could include an increase in water velocity due to channelization and stream bank stabilization, scouring and erosion of stream beds and potential contamination from hazardous substances washing from the yard site during rainfall events. Changes in the ground surface created by the presence of the rail yard could alter surface drainage to adjacent waterways.

Wetlands

There are no wetlands indicated on National Wetland Inventory (NWI) maps of the proposed rail yard site. One emergent wetland, with an area of approximately 1.3 acres, lies approximately 350 feet north of the proposed yard site. The change in flow of surface water due to the construction of the proposed rail yard could impact the hydrology of this wetland. Potential impacts to this adjacent wetland would be similar to those discussed in Section 3.2.7.2 and could include increased sedimentation and redistribution or loss of top soils.

Groundwater

The construction of the East Yard should not result in significant impacts to groundwater. However, possible contamination could result from a spill of hazardous substances during construction or operation of the yard. During operation of the yard, small spills of fuel and lubricants could accumulate over time, resulting in impacts to groundwater. Spills are unlikely, due to the expected reduction in derailments and compliance with regulatory procedures for handling, storing and disposing of potential contaminants.

3.5.1.1.5 Air

Construction and operation activities associated with the East Yard could create local impacts to the air quality. During construction, approximately 152.7 acres of ground would experience varying degrees of disturbance which would be a likely source of fugitive dust. Construction equipment such as graders and earth movers would be a source of emissions while operating. While more concentrated and occurring for a longer period, these emissions would be similar to emissions and fugitive dust generated from the current agricultural use of the yard site. Construction related affects to air quality would be limited to the several month period of yard construction. Vehicle emissions from motorists delayed during yard construction would not occur as the only road affected by this yard, Township Road 13 (Twp 13), would need to be permanently closed and traffic rerouted.

Locomotive emissions would be the primary source of air quality impacts from the East Yard. Additionally, this yard would provide facilities for a limited amount of refueling, which could contribute to air quality impacts. During operation, each locomotive would spend approximately 0.5 hour idling at this yard. Helper locomotives, to provide additional breaking for trains moving down Lewiston Hill, would also be based at this yard. SEA has calculated air quality impacts due to the operation of the yard according to the methodology presented in Appendix E. Table 3.5-1 presents the amount of emissions from locomotive activities under the 20 MNT (11 trains per day), 50 MNT (21 trains per day), and 100 MNT (37 trains per day) operating scenarios.

Table 3.5-1
Emission Levels of Proposed East Staging & Marshaling Yard

Operating Level	HC		CO		NO_x		SO_2		PM_{10}		Pb	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
20 MNT (11 trains per day)	3.13	13.16	8.54	35.85	44.68	187.66	5.54	23.25	2.13	8.96	1.73E-04	0.00072824
50 MNT (21 trains per day)	5.98	25.13	16.30	68.44	85.30	358.26	10.57	44.38	4.07	17.11	3.31E-04	0.00139028
100 MNT (37 trains per day)	10.54	44.28	28.71	120.59	150.29	631.23	18.86	76.2	7.18	30.15	5.83E-04	0.00244954

HC - Hydrocarbons
CO - Carbon Monoxide
PM_{10} - Particulate Matter (less than 10 microns in diameter)
SO_2 - Sulfur Dioxide
NO_X - Oxides of Nitrogen
Pb - Lead
tpy- tons per year

3.5.1.1.6 Noise

Increased noise levels would occur during construction and operation of East Yard. Noise associated with construction activities would be temporary, generally occurring during grading, site preparation and installation of yard facilities. The majority of construction noise produced would be from heavy equipment and vehicles. The duration of yard construction is expected to last for one to two construction seasons, generally extending from April 1 through November 1. Although the activities and noise associated with construction would be temporary, they could occur around the clock under certain conditions.

During operation in a rail yard, noise is generated by a variety of sources. Idling and operating locomotives, retarders, pumps, coupling and uncoupling of rail cars all contribute noise. However, these sources are scattered throughout the yard; reducing the magnitude of noise by spreading it over a greater distance. While potential noise impacts occur over a greater area, they are of less magnitude than if concentrated in one location. Additionally, noise sources at rail yards are generally within the interior of the yard, providing an area between the noise sources and the rail yard boundary in which noise can begin to decrease. This further reduces the potential noise impacts to areas adjacent to the yard.

While rail yard locations have been determined for each alternative, the location of yard tracks and other equipment is unavailable. Modeling to determine potential noise impacts requires the location of noise generating equipment. Therefore, noise contours could not be generated for rail yards. Because of the usual scattered nature of noise sources and their location within the interior of a yard, SEA conservatively determined noise sensitive receptors within 500 feet of the rail yard boundary would be those most likely impacted. There are 5 noise sensitive receptors which lie within 500 feet of the proposed yard (Table 3.5-2). These receptors would potentially experience increased noise levels due to construction and operation of the proposed rail yard.

Table 3.5-2
Noise Sensitive Receptors Located within 500 Feet of Proposed East Staging and Marshaling Yard for Alternative B

Distance from Rail Yard	Location	Number of Noise Sensitive Receptors
0 -100 feet	-	0
101- 200 feet	-	0
201- 400 feet	north of existing rail line	3
401- 500 feet	south of proposed yard boundary	2

3.5.1.1.7 Biological Resources

Vegetation

Construction activities associated with the development of the proposed East Yard facilities would cause both temporary and permanent impacts to vegetation. The conversion of approximately 152.0 acres of agricultural land to a rail yard could cause the loss of crops, if planted prior to construction. This cropland would no longer be available for crop production. Approximately 0.7 acre of woody vegetation that occur along the existing rail line would likely be cleared or disturbed during construction. Impacts associated with the construction and operation of the rail yard, such as soil loss due to erosion and the introduction of non-native or non-desirable species in buffer areas where vegetation and surface soils are disturbed, are presented in Section 3.2.10.1. Potential spills of hazardous substances could affect vegetation or soil properties in adjacent areas.

Grasses and woody species would likely reestablish naturally or through reseeding and planting in the outer areas and fence lines of the proposed yard where rail facilities are absent. These areas would need to be maintained by mowing or trimming during operation to control excessive growth of ground cover and woody vegetation. Herbicides used to control weeds during operation of the proposed yard could impact adjacent vegetative communities.

Wildlife

Wildlife using habitat in the proposed rail yard area have become habituated to activities associated with the existing rail line. However, short-term and long-term impacts are anticipated during construction and operation of the proposed rail yard. Operational and construction impacts, as presented in Section 3.2.11 may include habitat loss, noise, train-wildlife collisions, increased human presence and the introduction of contaminants into the environment.

During construction, vegetation within the proposed rail yard would be cleared or disturbed, decreasing available habitat for wildlife species. Small mammals, reptiles and amphibians would likely be killed or displaced during construction of the proposed rail yard. The loss of habitat due to construction would require wildlife using the area for cover and forage to relocate to nearby areas. However, the loss of habitat would not be significant because similar habitat would be available in adjacent areas and portions of the rail yard would be allowed to revegetate. Hunting and poaching pressure on local game populations could increase with increased human presence in the area. Because waterfowl are ground nesters, disturbance during nesting could result in destruction of nests and loss of nesting hens if nests were located within the proposed rail yard. Additionally, some loss of birds nests could occur for both tree and ground nesting species.

During operation, impacts to wildlife would be primarily due to disturbance from yard activity. However, the level of activity and lack of habitat within the proposed rail yard would likely result in most wildlife seeking more secluded habitats. It is also anticipated the rail yard would be fenced, serving to keep larger wildlife out of the rail yard. Some wildlife entering the yard would likely be lost due to yard operations. Safety hazards to small animals that may enter the yard and sporadic noise disturbance that may affect wildlife occupying adjacent habitats. The impacts to fish and mussels from rail yard operations would be limited to the unlikely event of fuel and chemical spills, and herbicide applications to the right-of-way entering nearby waterways.

3.5.1.1.8 Transportation and Safety

There is one roadway, Township Road 13 (Twp 13), within the area of the proposed East Yard. The average daily traffic along this roadway is estimated to be 55. It would be necessary to terminate and or reroute this road prior to crossing the existing DM&E rail line or entering the proposed yard. During construction and operation of the proposed yard, traffic would no longer have access through this area. Impacts associated with this road crossing, such as traffic delays and the opportunity for accidents would no longer exist. Traffic rerouted to other roadways may impact the volume of road traffic and safety of other crossings and roadways. Potential traffic delays and reduced access for emergency vehicles could occur. However, the low number of vehicles using Twp 13 (averaging 100 vehicles per day) would likely result in little change for other roadways. Construction traffic on local roads could cause additional traffic delays, wear on local roads, and increased safety concerns.

3.5.1.1.9 Socioeconomics

During construction, approximately 63 two-year jobs would be expected that are directly related to construction of the proposed rail yard. Jobs in the construction trades such as heavy equipment operators, carpenters, electricians and landscapers may be filled by local workers when available. Non-local workers could be used to fill shortages in construction positions and for actual rail construction activities. These workers would not likely locate permanently in the area. They would likely utilize temporary lodging, such as motels, hotels, rental property, recreational vehicle parks and campgrounds. These facilities are provided in the larger nearby communities of Winona and Rochester.

The estimated earnings for workers would total approximately $10.3 million (Table 3.5-3). A portion of this income would likely be spent on local goods and services. Additional short-term employment opportunities may be created in the service areas due to this spending and demand for goods and services. A portion of the earnings from construction would also provide tax revenues of approximately $1.5 million for the state and county.

Table 3.5-3
Estimated Earnings and Tax Revenues generated during Construction of Minnesota Rail Yards

Yard Location	Estimated Earnings	Sales Tax Paid
East Staging and Marshaling Yard	$10,303,000	$1,552,100
Waseca Marshaling Yard*	$3,833,800	$309,200
Middle East Staging and Marshaling Yard (Alternatives B&C) East Staging and Marshaling Yard (Alternative D)	$3,833,800	$309,200

* Actual Waseca figures not available, those presented are based on the Middle East Staging Yard due to the similar size of the two yards

Approximately 20-30 permanent rail jobs would be expected during the start-up of operations at this facility. At full operation, approximately 40-50 rail jobs would be provided. It is expected that these jobs would be filled by both local and non-local persons. With the 4.2 percent increase in the population of Winona County between 1986 and 1994 (Table 3.2-22), the influx of these workers and their families should not be a problem for the county to accommodate. Since the increase in employment represents less than one percent of the population of Winona County, no significant impacts should occur related to the county's ability to maintain adequate services to its citizens.

With an estimated 3.8 percent unemployment rate (Table 3.2-22), workers within the county, searching for employment, would benefit from the presence of high paying railroad jobs. Employment opportunities are expected to increase and unemployment decrease throughout the area. Commercial lodging and eating facilities are expected to be utilized by rail crews and workers as no DM&E facilities are expected to be provided at the East yard. Facilities located in nearby communities, such as Lewiston, Utica, Winona, and Rochester, could provide these services. An increase in support related jobs and contract jobs to fill these needs would be likely. Additional lodging and eating facilities may become established near the proposed yard site to provide convenient services to railroad workers. The potential increase in jobs could also provide additional tax revenues to the communities in surrounding areas and the county. Property taxes collected on new facilities would help Winona County continue the services it provides, and possibly allow them to upgrade or increase what they currently provide.

3.5.1.1.10 Hazardous Materials

Neither construction nor operation of the proposed project would result in an increase in the types or amounts of hazardous materials currently transported by DM&E. Potential impacts during construction could include disturbance of hazardous material sites that may have been located within the proposed rail yard site. Prior to construction, DM&E should coordinate with the Environmental Protection Agency (EPA), Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Natural Resources (MDNR) to determine if the proposed yard site had prior hazardous material contamination. This information would be included in the Phase 1 Environmental Site Assessment, which is used as a basis for determining contamination before acquiring a property. Searches of state and Federal databases, including Resource Conservation and Recovery Act (RCRA), State Hazardous Sites (SHWS) and Comprehensive Environmental Response, Compensation and Liability Act - No Further Remedial Action Planned (CERCLIS-NFRAP) were conducted to identify any listed contamination sites within a mile of the existing rail line. There were no sites for Winona County listed in any of these databases. Leaking Underground Storage Tanks (LUST) and Emergency Response Notification System (ERNS) database searches investigated the area within 0.5 mile of the existing rail line. In Winona County, four LUST sites and three ERNS sites were identified. If any of these sites are located within the proposed yard location, appropriate action would be necessary to avoid disturbance of the sites.

During project operation, no impacts should occur to existing hazardous material sites. There would be a potential for spills resulting from derailments or improper handling of hazardous materials such as fuel, oil and lubricants. Contamination from spills would be unlikely due to the expected reduction in derailments and required compliance with regulatory procedures regarding handling, storage, and disposal of hazardous substances.

3.5.1.1.11 Cultural Resources

There are no known cultural resources or historic sites located within the proposed rail yard. A survey of the area would be conducted to determine if any sites are present. Any sites identified would be addressed according to the Programmatic Agreement (PA) (Appendix J).

3.5.1.2 Waseca Marshaling Yard

3.5.1.2.1 Location

The new Waseca Marshaling Yard (Waseca Yard) for Alternative B would begin approximately 0.3 mile west of Waseca, Minnesota between mile posts 105.3 and 107.5 on the south side of the existing DM&E rail line. It would extend west, ending approximately 5.0 miles east of Janesville, Minnesota. The yard would be 2.2 miles in length and 300 feet in width. Construction of the yard would require the conversion of approximately 80.0 acres of land from its present use into a rail yard facility. Placement of the Waseca Yard to a more rural location would provide significant improvements to the existing operations. It will help lessen the amount of blocking and switching activity that occurs on a regular basis at the current yard location in downtown Waseca, causing traffic and access concerns. The Waseca Yard would function as a marshaling yard for manifest, grain, and way freight. The Waseca Yard may contain limited mechanical and refueling facilities.

3.5.1.2.2 Geology and Soils

The proposed Waseca Yard would be constructed in an area containing glacial till. Soils found in the area are clay loam mixtures. Nicolet, Le Sueur and Webster clay loams are predominant throughout the proposed rail yard site. Slope of the soil ranges from 0 to 6 percent. Impacts during construction could include erosion and loss of top soil in the proposed rail yard site and any disturbed adjacent areas. Soils would be graded and covered with rail lines, gravel, concrete and asphalt. Approximately 74.0 acres of prime farmland would be converted to use as a rail yard facility. During operation, run-off from the yard or redirected surface water, due to impermeable surfaces and structures within the proposed rail yard, could cause increased erosion in adjacent yard areas.

3.5.1.2.3 Land Use

Agriculture

The proposed Waseca Yard site is primarily agricultural. There are approximately 78.7 acres of agricultural land located within the proposed yard site, of which approximately 74.0 acres is prime farmland. The land would be lost for agricultural production through conversion to a rail yard.

Residential

There is no residential land present within the proposed rail yard site. No residences are located within 500 feet of the proposed rail yard boundary.

Commercial

One commercial property, with an area of approximately 1.3 acres, lies within the boundary of the proposed Waseca Yard site. This property would be acquired by the railroad, and the business removed or relocated outside the proposed rail yard boundary.

Several businesses are located in areas adjacent to the proposed rail yard site. These businesses could be impacted by noise, dust, increased road traffic and vehicle delays associated with the movement of construction equipment and road closures on area roadways.

3.5.1.2.4 Water Resources

Surface Water

There are no streams present within the proposed rail yard site. No impacts would be expected for surface waters within the rail yard boundary. Changes in the ground surface created by the presence of the rail yard could alter surface drainage to adjacent waterways.

Wetlands

There are no wetlands identified within the proposed rail yard site. However, approximately 39.0 acres of emergent wetland lies approximately 200 feet north of the rail yard site and existing rail line. Potential impacts to this adjacent wetland would be similar to those discussed in Section 3.2.7.2 and could include sedimentation, redistribution or loss of top soils, and changes in hydrology due to construction of the rail yard altering local drainage patterns.

Groundwater

The construction of the proposed rail yard should not result in significant impacts to groundwater. However, possible contamination could result from a spill of hazardous substances during construction or operation of the proposed yard. During operation of the proposed yard, small spills of fuel and lubricants could accumulate over time, resulting in impacts to groundwater. Spills are unlikely due to the expected reduction in derailments and compliance with regulatory procedures for handling, storing and disposing of potential contaminants.

3.5.1.2.5 Air

The construction and operation of the Waseca Yard has the potential to create local impacts to air quality. During construction, approximately 80.0 acres of ground would experience varying degrees of disturbance. Ground clearing and construction activities could contribute to fugitive dust in the immediate area. Exhaust from construction equipment would contribute to air quality impacts during construction. However, as for the East Yard, construction equipment emissions would be similar to existing agricultural emissions. No emissions due to delayed vehicles would be expected because the only road in the yard area, County Road 52 (Co Rd 52) would be closed to accommodate the rail yard. Construction impacts to air quality would be limited to the short (several months) construction period.

During operation, this yard would have facilities to provide limited fueling to locomotives. Escaping fumes during locomotive fueling could contribute to air quality impacts. However, emissions from operating and switching locomotives would be the primary contributor to air emissions from this yard. Each locomotive would spend approximately 0.5 hour idling at the Waseca Marshaling Yard. SEA has calculated air quality impacts according to the methodology presented in Appendix E. Table 3.5-4 presents the amount of emissions from locomotive activity in the Waseca Marshaling Yard under the 20 MNT, 50 MNT, and 100 MNT operating level scenarios.

Table 3.5-4
Emission Levels of Proposed Waseca Marshaling Yard

Operating Level	HC		CO		NO_x		SO_2		PM_{10}		Pb	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
20 MNT (11 trains per day)	3.13	13.16	8.54	35.85	44.68	187.66	5.54	23.25	2.13	8.96	1.73E-04	0.00072824
50 MNT (21 trains per day)	5.98	25.13	16.30	68.44	85.30	358.26	10.57	44.38	4.07	17.11	3.31E-04	0.00139028
100 MNT (37 trains per day)	10.54	44.28	28.71	120.59	150.29	631.23	18.86	76.2	7.18	30.15	5.83E-04	0.00244954

HC - Hydrocarbons; CO - Carbon Monoxide; PM_{10} - Particulate Matter (less than 10 microns in diameter)
SO_2 - Sulfur Dioxide; NO_X - Oxides of Nitrogen; Pb - Lead; tpy- tons per year

3.5.1.2.6 Noise

There are no noise sensitive receptors located within 500 feet of this proposed rail yard site. Therefore, noise impacts during construction and operation of the yard are not expected.

3.5.1.2.7 Biological Resources

Vegetation

Construction activities associated with the development of the proposed yard facilities could cause temporary and permanent impacts to vegetation. The conversion of approximately 78.7 acres of agricultural land to a rail yard facility could cause the loss of crops, if planted prior to construction. Cropland would no longer be available for crop production. Impacts associated with the construction and operation of the railroad, such as soil loss due to erosion and the introduction of non-native or non-desirable species in buffer areas where vegetation and surface soils are disturbed, are discussed in Section 3.2.10.1. Potential spills of hazardous substances used during construction of the rail yard may impact vegetative communities in adjacent areas. Woody vegetation and grasses which occur along the existing rail line would likely be cleared or disturbed during construction.

Grasses and woody species would likely reestablish naturally or through reseeding and planting in the outer areas and fence lines of the yard where rail facilities are absent. These areas would need to be maintained by mowing or trimming during operation to control excessive growth of ground cover and woody vegetation. The use of herbicides to control weeds during operation of the rail yard could impact adjacent vegetative communities.

Wildlife

Impacts for the Waseca facilities would be similar to those described for the East Staging and Marshaling Yard. Operational and construction impacts, as presented in Section 3.2.11 could include habitat loss, noise, train-wildlife collisions, disturbance from increased human presence and the introduction of contaminants into the environment.

3.5.1.2.8 Transportation and Safety

There is one roadway, Co Rd 52, which would cross the proposed Waseca Yard. The average daily traffic (ADT) along this roadway is estimated to be 55. It would be necessary to close and/or reroute this road prior to crossing the existing DM&E rail line or entering the proposed rail yard. During construction and operation of the yard, traffic would no longer have access through this area. Impacts associated with this road crossing of the existing rail line, such as traffic delays and the opportunity for accidents, would no longer exist. Traffic rerouted to other roadways may impact the volume of road traffic and safety of other crossings and roadways. Potential traffic delays and reduced access for emergency vehicles could occur. However, the low number of vehicles using Co Rd 53 would likely result in little change for other roadways. Construction traffic on local roads could cause additional vehicle delays, wear on local roads, and increased safety concerns.

3.5.1.2.9 Socioeconomics

No information is currently available for the socioeconomic impacts that could result from the construction of this proposed rail yard. However, since the yard size would be similar to that of the Middle East Yard (Section 3.4.1.3.1), it is assumed that approximately 28 two-year jobs directly related to construction of the Waseca Yard could be expected. Jobs in the construction trades such as heavy equipment operators, carpenters, electricians and landscapers would be filled by local workers when available. Non-local workers could be used to fill shortages in construction positions and for actual rail construction activities. These workers may not locate permanently in the area. They may use temporary lodging, such as motels, hotels, rental property, recreational vehicle parks and campgrounds in nearby communities including Waseca, Janesville, Owatonna, and Mankato.

The estimated earnings for construction workers is assumed to total approximately $3.8 million, based on estimates presented for the Middle East Yard (Table 3.5-3). A portion of this income would likely be spent on local goods and services. Additional short-term employment opportunities may be created in the service areas due to this spending and demand for goods and services. A portion of the earnings from construction would also provide tax revenues assumed to total approximately $309,200 for the state and county.

Approximately 60-70 permanent jobs would be expected during start-up of operations at this facility. At full operation, approximately 75-100 jobs would be provided. These jobs would be filled by both local and non-local persons. However, it is assumed that a majority of these jobs would be transferred from the existing Waseca Yard, located in town, to the new facilities located approximately 0.3 mile west of Waseca. With the 0.2 percent decrease in the population of Waseca County between 1986 and 1994 (Table 3.2-22), the influx of workers and their families should not be a problem for the county to accommodate. Since the increase in employment represents less than 1 percent of the population of Waseca County, no significant impacts should occur related to the county's ability to maintain adequate services to its citizens.

With an estimated 4.3 percent unemployment rate (Table 3.2-22), workers within the county, searching for employment, would benefit from the presence of high paying railroad jobs. Employment opportunities would be expected to increase and unemployment decrease throughout the area. Commercial lodging and eating facilities are expected to be utilized by rail crews and workers and no company facilities are expected to be provided at this location. Facilities located in nearby communities, such as Waseca and Janesville, could provide these services. An increase in support related jobs and contract jobs to support these needs would be likely. Additional lodging and eating facilities may become established near the proposed yard site to provide convenient services to railroad workers. The potential increase in jobs could also provide additional tax revenues to the communities in surrounding areas and the county. Property taxes collected on new facilities would help Waseca County continue the services it provides, and possibly use them to upgrade or increase what they currently provide.

3.5.1.2.10 Hazardous Materials

Neither construction nor operation of the proposed project would result in an increase in the types or amounts of hazardous materials currently transported by DM&E. Potential impacts during construction could include disturbance of hazardous material sites that may have been located within the proposed rail yard site. Prior to construction, DM&E should coordinate with the EPA, MPCA and MDNR to determine if the proposed yard site had prior hazardous material contamination. Searches of state and Federal databases, including RCRA, SHWS and CERCLIS-NFRAP were conducted by SEA to identify any listed contamination sites within a mile of the existing rail line. LUST and ERNS database searches investigated the area within 0.5 mile of the existing rail line. One site was identified in the SHWS and CERCLIS databases within Waseca County. The site is located in Waseca, Minnesota at E. J. Johnson Company, Inc. on 10th Ave. SW, which is located approximately 2.0 miles southeast of the proposed rail yard site and would not be impacted by this yard. In Waseca County, three LUST sites and one ERNS site were also identified. If any of these sites are within the proposed yard location, appropriate action would be necessary to avoid disturbance of the sites.

During project operation, no impacts should occur to existing hazardous material sites. There would be a potential for spills resulting from derailments or improper handling of hazardous materials such as fuel, oil and lubricants. Contamination from spills would be unlikely due to the expected reduction in derailments and required compliance with regulatory procedures regarding handling, storage, and disposal of hazardous substances.

3.5.1.2.11 Cultural Resources

There are no known cultural resources or historic sites located within the proposed Waseca Yard site. A survey of the area would be conducted to determine if any sites are present. Any sites identified would be addressed according to the PA (Appendix J).

3.5.1.3 Middle East Staging and Marshaling Yard

Two alternative locations for the Middle East Staging and Marshaling Yard (Middle East Yard) have been proposed by DM&E. These alternatives, Option A and Option B, are described below.

3.5.1.3.1 Location

Option A

Under Option A, the Middle East Yard would be located approximately 1.0 mile east of Judson, Minnesota and approximately 4.0 miles west of Mankato, Minnesota. The yard would be located between mile posts 147.0 and 149.4, on the north side of the existing DM&E rail line. The proposed rail yard would be 2.4 miles long and 400 feet wide, with a total area of approximately 116.4 acres. The Middle East Yard would act as a staging yard for loaded and empty coal trains, a marshaling yard for grain, manifest and way freight traffic, would support interchange with the Union Pacific Railroad Company (UP) at Mankato, as well as providing a crew change point for all coal, manifest, grain and way freight trains.

Option B

Under Option B the Middle East Staging and Marshaling Yard would be located approximately 0.25 mile southeast of New Ulm, Minnesota and approximately 4.5 miles northwest of Cambria, Minnesota. The yard would be located between mile posts 160.5 and 162.8 on the south side of the existing DM&E rail line. The proposed rail yard would be 2.3 miles long and 400 feet wide, with a total area of approximately 111.5 acres. The Middle East Yard under Option B would provide the same functions as the Option A alternative.

3.5.1.3.2 Geology and Soils

Option A

The proposed Middle East Yard between Judson and Mankato would be constructed in an area containing loamy glacial till and sediments deposited over a limestone bedrock. The dominant soil types in the area of the proposed rail yard are Joliet silty clay loam and Copaston loam. Slopes generally range from 0-2 percent for the Joliet silty clay loam to 1-4 percent for the Copaston loam with top soil depths of 0 to 8 inches. Runoff is slow to medium. No prime farmland was identified in the area. The thin surface layer of soil and rock outcrops make the area poorly suited for urban use and intensive farming. Some areas are poorly-drained and prone to flooding by runoff from the uplands. Wetness limits the use of this soil, and in places rock outcrops, stones and boulders on the surface are also limitations. During construction of the proposed rail yard, soils would be graded and covered with rail lines, gravel, concrete and asphalt. Disturbed and compacted soils could lose productivity. Operational impacts, including erosion and disturbance, could occur as a result of right-of-way maintenance activities. Contamination could occur in the event of an accidental spill of hazardous substances.

Option B

The proposed yard between Cambria and New Ulm would be constructed in an area containing loamy glacial till over a sandstone bedrock. Soils in the area include Lemond loam, Tilfer Variant clay loam, Delft clay loam and Madelia silt clay loam. Slopes generally range from 0-2 percent. Top soil depths range from 0 to 18 inches. Approximately 109.4 acres of prime farmland were identified within the proposed rail yard boundary. Soils in the area are poorly-drained. Tilfer Variant clay loam and Delft clay loam have high moisture content. Medelia silt clay loam and Lemond loam have a high lime content. Most of these soils are used for cropland and are well suited for trees and shrubs. During construction of the proposed rail yard, soils would be graded and covered with rail lines, gravel, concrete and asphalt. Disturbed and compacted soils could lose productivity. Operational impacts, including erosion and disturbance, could occur as a result of right-of-way maintenance activities. Contamination could occur in the event of an accidental spill of hazardous substances.

3.5.1.3.3 Land Use

Agriculture

Option A

The area where the proposed rail yard would be built is rural and largely undeveloped. Approximately 86.0 acres were identified as pasture or grassland, approximately 16.8 acres as woodlands, and approximately 12.6 acres as cropland. No prime farmland was identified within the proposed rail yard site. Woodlands would be cleared during construction and land used for crops and pasture would be lost for agricultural production through conversion to rail yard.

Option B

The area where the proposed rail yard would be built is rural and undeveloped. Approximately 97.3 acres was identified as cropland and approximately 12.1 acres were identified as woodland. Approximately 109.4 acres of prime farmland were identified within the proposed rail yard site. Woodlands would be cleared during construction and land used for crops would be lost for agricultural production through conversion to rail yard.

Residential

Option A

There is approximately 1.0 acre of residential land present within the proposed rail yard site. Several non-residential, agricultural buildings are also located within the proposed yard site. This land would be acquired by the railroad and converted to railroad use. The buildings would be removed or converted to railroad use. There are 17 residences located within 500 feet of the proposed rail yard boundary. These consist of 3 rural farmsteads and 14 rural residences outside the town of Judson, Minnesota. Impacts to these residences, during construction, could include noise, dust, increased road traffic and vehicle delays associated with the movement of construction equipment and road closures on area roadways. These impacts would be temporary, during construction of the proposed rail yard. Nearby residences would experience rail yard noise and inconvenience from road closure during operation of the proposed rail yard.

Option B

There are approximately 1.6 acres of residential land present within the proposed rail yard site. There are two residences located within the proposed rail yard site. This land would be acquired by the railroad and converted to railroad use. The buildings would be removed, relocated, or converted to railroad use. There are 12 residences located within 500 feet of the proposed rail yard boundary. These consist of 5 rural farmsteads and 7 rural residences outside the city of New Ulm. Impacts would be similar to those discussed under Option A.

Commercial

Options A and B

There is no commercial property located within either proposed rail yard boundary. Several business are located in areas adjacent to the proposed yard site. Impacts to these businesses would include noise, dust, increased road traffic and vehicle delays associated with the movement of construction equipment and road closures on area roadways.

State Land

Option A

The Minneopa State Park is situated approximately 1.0 mile southeast of the proposed rail yard. Impacts to the existing park area from construction of the proposed rail yard are presumed to be insignificant due to the current distance between the park and the proposed rail yard site. However, the State has plans to potentially acquire 12 additional parcels of land, totaling 1,473 acres, as part of park expansion. Approximately 46 acres of the total is property of DM&E and contains existing railroad facilities.

The statutory boundary of Minneopa State Park encompasses a total of 2,690 acres. A majority of this land lies to the north and west of the present park location. The new park boundary would extend from approximately 0.5 mile east of Judson to the southeast, generally between the Minnesota River and the existing DM&E railroad. The new park lands would join the existing park at the northeast end. While most of the identified properties would be north of the existing DM&E rail line, portions of the several parcels would extend across the existing rail line and include lands on both sides of the existing rail line. These parcels are located at the northwest and southeast ends of the proposed new park land. The entire rail yard, approximately 116.4 acres, would be located within this new statutory boundary of Minneopa State Park.

Option B

There is no state land located within the boundary of the proposed rail yard site for Option B.

3.5.1.3.4 Water Resources

Surface Water

Option A

There are 5 intermittent streams that pass through the proposed location of the Middle East Yard. The proposed yard would be approximately 700 feet from the Minnesota River. There are also 2 oxbow lakes that are within 400 feet of the proposed rail yard site. Impacts to surface water, as described in Section 3.2.7.1, could include an increase in water velocity due to stream channelization and stream bank stabilization, scouring and erosion of streams and potential contamination from hazardous substances washing from the yard site during rain fall events. Changes in the ground surface created by the presence of the proposed rail yard could alter surface drainage to adjacent waterways and increase sedimentation.

Option B

One intermittent stream passes through the proposed Middle East Yard. The Minnesota River lies approximately 600 feet north of the proposed rail yard. The existing DM&E rail line crosses the Cottonwood River at the north end of the proposed rail yard. Impacts to these waterways would be similar to those presented for Option A.

Wetlands

Option A

There are approximately 3.7 acres of wetlands within the proposed rail yard site. There are approximately 1.0 acre of emergent wetlands, approximately 0.9 acre of forested wetlands, and 1.8 acres of scrub-shrub wetlands. These wetlands would likely be lost with the construction of the new staging and marshaling yard. Loss would result from draining and/or filling of these wetlands. Impacts to adjacent wetlands could include increased sedimentation, redistribution or loss of top soils, and changes in hydrology.

Option B

There are approximately 14.2 acres of wetlands located within the proposed rail yard site. There are approximately 5.2 acres of emergent wetlands and approximately 9.0 acres of scrub-shrub wetlands. Impacts to these and adjacent wetlands would be similar to those presented for Option A.

Groundwater

Options A and B

The construction of the proposed rail yard should not result in significant impacts to groundwater. However, possible contamination could result from a spill of hazardous substances during construction or operation of the yard. During operation of the proposed yard, small spills of fuel and lubricants could accumulate over time, resulting in impacts to groundwater. Spills are unlikely due to the expected reduction in derailments and compliance with regulatory procedures for handling, storage, and disposing of potential contaminants.

3.5.1.3.5 Air

Options A and B

The construction and operation of the Middle East Yard would create local impacts to air quality. During construction, under Options A and B, approximately 116.4 acres of land, and approximately 111.5 acres of land, respectively, would experience ground disturbing activities such as earth moving and ground clearing. Construction activities, including ground disturbance, could contribute to fugitive dust around the yard site. Exhaust from construction equipment, as well as fugitive dust, would be sources of air emissions during construction. These would be similar to the agricultural emissions resulting from farming activities currently occurring at the yard site. Township Roads 461 (Twp 461) and Twp 231, which pass through the yard site, would be closed eliminating emissions from delayed vehicles at these road crossings of the existing rail line.

During operation, each locomotive would spend approximately 0.25 hour idling at the Middle East Yard. This would be the primary source of air emissions from this yard. SEA has calculated air emissions according to the methodology presented in Appendix E. Table 3.5-5 presents the amount of emissions from locomotive activity in the Middle East Yard under the 20 MNT, 50 MNT, and 100 MNT operating level scenarios.

Table 3.5-5
Emission Levels of Proposed Middle East Staging & Marshaling Yard

Operating Level	HC		CO		NO_x		SO_2		PM_{10}		Pb	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
20 MNT (11 trains per day)	1.57	6.58	4.27	17.93	22.34	93.83	2.77	11.62	1.07	4.48	8.67E-05	0.00036412
50 MNT (21 trains per day)	2.99	12.57	8.15	34.22	42.65	179.13	5.28	22.19	2.04	8.56	1.66E-04	0.00069514
100 MNT (37 trains per day)	5.27	22.14	14.36	60.30	75.15	315.61	9.31	39.10	3.59	15.07	2.92E-04	0.00122477

HC - Hydrocarbons; CO - Carbon Monoxide; PM_{10} - Particulate Matter (less than 10 microns in diameter)
SO_2 - Sulfur Dioxide; NO_X - Oxides of Nitrogen; Pb - Lead; tpy- tons per year

3.5.1.3.6 Noise

Option A

Noise increases would occur during construction and operation of the Middle East Yard. Noise associated with construction activities would be temporary during the several month construction period, generally occurring only during grading, site preparation and installation of yard facilities. The majority of construction noise produced would be from heavy equipment and vehicles. The duration of yard construction is expected to last for one to two construction seasons, generally extending from April 1 through November 1. Although the activities and noise associated with construction would be temporary, DM&E has indicated they could occur around the clock. Noise impacts would be similar to those presented for the East Staging and Marshaling Yard for Alternative B.

There are 17 noise sensitive receptors located within 500 feet of the proposed rail yard (Table 3.5-6). These receptors would potentially experience increased noise levels due to operation of the proposed rail yard similar to those discussed in Section 3.4.1.1 for the East Yard.

Table 3.5-6
Noise Sensitive Receptors Located within 500 Feet of Proposed Middle East Staging and Marshaling Yard for Option A, Alternative B

Distance from Rail Yard	Location	Number of Noise Sensitive Receptors
0 -100 feet	-	0
101- 200 feet	north of rail yard	3
201- 400 feet	1 - north of rail yard 7 - south of rail yard	8
401- 500 feet	north of rail yard	6

Option B

Noise increases would occur during construction and operation of the Option B Middle East Yard site similar to those discussed for the Option A alternative. Noise associated with construction activities would be temporary, generally occurring only during grading, site preparation, and installation of yard facilities.

There are 12 noise sensitive receptors located within 500 feet of the Option B proposed rail yard (Table 3.5-7) location. These receptors would potentially experience increased noise levels due to construction and operation of the proposed rail yard similar to those discussed in Section 3.4.1.1.

Table 3.5-7
Noise Sensitive Receptors Located within 500 Feet of Proposed Middle East Staging and Marshaling Yard for Option B, Alternative B

Distance from Rail Yard	Location	Number of Noise Sensitive Receptors
0 -100 feet	-	0
101- 200 feet	north of existing rail line	2
201- 400 feet	north of existing rail line	7
401- 500 feet	north of existing rail line	3

3.5.1.3.7 Biological Resources

Vegetation

Option A

Construction activities associated with the development of the proposed yard facilities would cause temporary and permanent impacts to vegetation. The conversion of approximately 12.6 acres of agricultural land to a rail yard facility could cause the loss of crops, if planted prior to construction. This cropland would no longer be available for crop production. Approximately 16.8 acres of woody vegetation and approximately 86.0 acres of grasslands that occur within the proposed yard site would be cleared during construction. Impacts associated with the construction and operation of the railroad, such as soil loss due to erosion and the introduction of non-native or non-desirable species in buffer areas where vegetation and surface soils are disturbed, are presented in Section 3.2.10.1. Potential spills of hazardous substances used during construction of the proposed rail yard may impact vegetative communities in adjacent areas.

Grasses and woody species would likely reestablish naturally, or through reseeding and planting in the outer yard area and along yard fence lines where rail facilities are absent. These areas would need to be maintained by mowing or trimming during operation to control excessive growth of ground cover and woody vegetation. Herbicides used to control weeds could impact adjacent vegetative communities during operation of the proposed rail yard.

Option B

Vegetative communities within the proposed rail yard would include approximately 12.1 acres of woody vegetation, approximately 14.2 acres of wetlands and approximately 97.3 acres of agricultural cropland. Impacts would be similar to those discussed for Option A.

Wildlife

Options A and B

Impacts to wildlife, due to either alternative location for the new Middle East Yard, would be similar to those described for the East Staging and Marshaling Yard. The loss of pasture and woodland habitat due to construction would require wildlife using these habitats for cover and forage to relocate to nearby areas. Operational and construction impacts, as presented in Section 3.2.11, may include habitat loss, noise disturbance, train-wildlife collisions, increased human presence and the introduction of contaminants into the environment. Operational impacts could also include loss or harm of individuals that may enter the yard and noise disturbance that may make the surrounding areas undesirable for some species.

3.5.1.3.8 Transportation and Safety

Option A

The Middle East Rail Yard would cross 2 roads as shown in Table 3.5-10 at the end of this section. The ADT along these roadways is estimated to be 100 along Twp 461, and 52 along Twp 231. These are gravel, light purpose roads that lead to nearby residential areas. It would be necessary to close and/or reroute these roads prior to crossing the existing DM&E rail line or entering the proposed rail yard. During construction and operation of the proposed yard, traffic would no longer have access through this area. Impacts associated with these road crossings of the existing DM&E rail line, such as vehicle delays and the opportunity for accidents would no longer exist. However, traffic rerouted to other roadways may impact the volume of road traffic and safety of other crossings and roadways. Potential vehicle delays and reduced access for emergency vehicles could occur. However, the low number of vehicles using these roadways would likely result in little change for other roadways. Construction traffic on local roads could cause additional traffic delays, wear on local roads, and safety concerns.

Currently, DM&E operates over UP trackage through Mankato as discussed in Chapter 2 and Section 3.3.1 Mankato. Movement of DM&E trains from one side of Mankato to the other requires DM&E to coordinate with UP train movements over the UP rail line and through the UP rail yard just north of Mankato. DM&E is capable of interchanging traffic with UP in the yard. However, construction and operation of the Middle East Yard, Option A, would provide for less operational conflicts and greater efficiency for these interchanges as well as provide the functions discussed earlier necessary for DM&E operations.

Option B

The Middle East Yard would cross 1 road, Twp 97. The average daily traffic along this roadway is estimated to be 100. Impacts resulting from closure and rerouting of this road would be similar to those presented for roads affected by Option A.

Because the Option B site for the Middle East Yard would be farther from the existing UP rail yard in Mankato, any interchange of traffic between the two carriers would be less efficient than with the Option A location. Locomotives and crews would need to travel greater distances to pick up and deliver rail cars being interchanged. This would increase time, fuel consumption, and require additional equipment, particularly switching locomotives then would be necessary for the Option A location.

3.5.1.3.9 Socioeconomics

Option A

During construction, approximately 28 two-year jobs would be expected that are directly related to construction of the rail yard. Jobs in construction trades such as heavy equipment operators, carpenters, electricians and landscapers may be filled by local workers when available. Non-local workers would be used to fill shortages in construction positions and for actual rail construction activities. These workers would not likely locate permanently in the area. They would utilize temporary lodging such as motels, hotels, rental property, recreational vehicle parks and campgrounds, likely in nearby communities such as Mankato, St. Peter, and New Ulm.

The estimated earnings for workers would total approximately $3.8 million (Table 3.5-3). A portion of this income would likely be spent on local goods and services. Additional short-term employment opportunities may be created in the service areas due to this spending and demand for goods and services. A portion of the earnings from construction would also provide tax revenues of approximately $0.3 million for the state and county.

Approximately 50-100 permanent jobs would be expected during the start-up of operations at this facility. At full operation, approximately 250-300 jobs could be provided. It is expected that these jobs would be filled by both local and non-local persons. With the 5.9 percent increase in population of Blue Earth County between 1986 and 1994 (Table 3.2-22), the influx of these workers and their families should not be a problem for the county to accommodate. Since the increase in employment represents less than one percent of the population of Blue Earth County, no significant impacts should occur related to the county's ability to maintain adequate services to its citizens.

With an estimated 2.9 percent unemployment rate (Table 3.2-22), workers within the county, searching for employment, would benefit from the presence of high paying railroad jobs. Employment opportunities are expected to increase, and unemployment decrease, throughout the area. Commercial lodging and eating facilities are expected to be utilized by rail crews and workers and no company facilities are expected to be provided at this location. Facilities located in nearby communities, such as New Ulm and Mankato, could provide these services. An increase in support related jobs and contract jobs to fill these needs would be likely. Additional lodging and eating facilities could become established near the proposed yard site to provide convenient services to railroad workers. The potential increase in jobs could also provide additional tax revenues to the communities in surrounding areas and the county. Property taxes collected on new facilities would help Blue Earth County continue the services it provides, and possibly allow them to upgrade or increase what they currently provide.

Option B

Generally, the socioeconomic impacts of construction of the Middle East Yard at the Option B location would be similar to those at the Option A location. However, under Option B, the impacts would occur primarily in Brown County.

Approximately 50-100 permanent jobs would be expected during the start-up of operations at this facility. At full operation, approximately 250-300 jobs would be provided. It is expected that these jobs would be filled by both local and non-local persons. With a 3.4 percent decrease in population of Brown County between 1986 and 1994 (Table 3.2-22), the influx of these workers and their families should not be a problem for the county to accommodate. Since the increase in employment represents less than one percent of the population of Brown County, no significant impacts should occur related to the county's ability to maintain adequate services to its citizens.

With an estimated 4.0 percent unemployment rate (Table 3.2-22), workers within the county, searching for employment, would benefit from the presence of high paying railroad jobs. Employment opportunities are expected to increase, and unemployment decrease, throughout the area. Commercial lodging and eating facilities are expected to be utilized by rail crews and workers and no company facilities are expected to be provided at this location. Facilities located in nearby communities, such as New Ulm, Cambria, and Mankato could provide these services. An increase in support related jobs and contract jobs to fill these needs would be likely. Additional lodging and eating facilities could become established near the proposed yard site to provide convenient services to railroad workers. The potential increase in jobs could also provide additional tax revenues to the communities in surrounding areas and the county. Property taxes collected on new facilities would help Brown County continue the services it provides, and possibly allow them to upgrade or increase what they currently provide.

3.5.1.3.10 Hazardous Materials

Neither construction nor operation of the Middle East Yard would result in an increase in the types or amounts of hazardous materials currently transported by DM&E. Potential impacts during construction could include disturbance of hazardous material sites that could be located within the proposed rail yard site. Prior to construction, DM&E should coordinate with the EPA, MPCA and MDNR to determine if the proposed yard site had prior hazardous material contamination. Searches of state and Federal databases, including RCRA, SHWS and CERCLIS-NFRAP were conducted to identify any listed contamination sites within a mile of the existing rail line. LUST and ERNS database searches investigated the area within 0.5 mile of the existing rail line. The results of these searches are included below for each alternative yard location.

During project operation, no impacts should occur to existing hazardous material sites. There would be a potential for spills resulting from derailments or improper handling of hazardous materials such as fuel, oil and lubricants. Contamination from spills would be unlikely due to the expected reduction in derailments and required compliance with regulatory procedures regarding handling, storage, and disposal of hazardous substances.

Option A

In Blue Earth County, seven LUST sites and four ERNS sites were identified. There were no sites for Blue Earth listed in any other databases. If any of these sites are determined to be within the proposed yard location, appropriate action would be necessary to avoid disturbance of the sites.

Option B

In Brown County, one CERCLIS site was listed, the New Ulm Gas Manufacturing, located on the northeast corner of 1st Street and N. Valley in New Ulm, east of the existing rail line. This site is not located within the proposed rail yard boundary. There were also four LUST sites and two ERNS sites identified for Brown County. If any of these sites are determined to be within the proposed yard location, appropriate action would be necessary to avoid disturbance of the sites.

3.5.1.3.11 Cultural Resources

Options A and B

There are no known cultural resources or historic sites located within either of the proposed rail yard sites. A survey of the selected yard site would be necessary to determine if any sites are present. Any sites identified would be addressed according to the PA (Appendix J).

3.5.1.3.12 Summary

The impacts of the new rail yards proposed in Minnesota for Alternative B are summarized below in Tables 3.4-8 to 3.4-10.

Table 3.5-8
Land Use for Proposed Minnesota Rail Yards - Alternative B

Yard	Agricultural (Acres)	Residential (Acres)	Commercial (Acres)
East	152.0	0	0
Waseca	78.7	0	1.3
Middle East Option A	98.6	1.0	0
Middle East Option B	97.4	1.6	0

Table 3.5-9
Summary of Selected Impacts for Proposed Minnesota Rail Yards - Alternative B

Yard	Acres (approx.)	Prime Farmland	No. Of Streams	Acres of Wetlands	Noise Sensitive Receptors within 500 feet
East	152.7	94.0 acres	2	0	5
Waseca	80.0	74.0 acres	0	0	0
Middle East Option A	116.4	0 acres	5	3.7	17
Middle East Option B	111.5	109.4 acres	1	14.2	12

Table 3.5-10
Roadways Impacted by Proposed Minnesota Rail Yards - Alternate B

Yard and Roadways	Location	Average Daily Traffic
East		
Twp 13	Mile Post 21.1	55
Waseca		
Co Rd 52	Mile Post 106.2	55
Middle East Option A		
Twp Hwy 461	Mile Post 147.2	100
Twp Hwy 231	Mile Post 148.9	52
Middle East Option B		
Twp 97	Mile Post 160.6	100

3.5.2 ALTERNATIVE C

The following discusses the potential impacts of the proposed new rail yards, based on their necessary locations for Extension Alternative C.

3.5.2.1 East Staging and Marshaling Yards

The location and dimensions of this proposed yard would be the same as those described for the East Staging and Marshaling Yard proposed under Alternative B (Section 3.5.1.1). Construction and operation impacts would also be the same.

3.5.2.2 Waseca Marshaling Yard

3.5.2.2.1 Location

Under Alternative C, the Waseca Marshaling Yard (Waseca Yard) would begin at the western edge of Waseca and end approximately 5.5 miles east of Janesville. The proposed yard would be located between mile posts 104.3 and 107.0, in generally the same location as for Alternative B (between mile post 105.3 and 107.5), along the south side of the existing DM&E rail line. The proposed rail yard would be 2.6 miles in length and 300 feet wide. The area contained within the proposed yard site would be approximately 94.5 acres.

3.5.2.2.2 Geology and Soils

The geology and soils information for this proposed yard location would be similar to the description of geology and soils provided for the Waseca Yard in Alternative B (3.5.1.2.2). There would be approximately 89.0 acres of prime farmland contained within this yard site.

3.5.2.2.3 Land Use

Agriculture

Approximately 93.2 acres of land within the proposed rail yard (all but 1.3 acres) are used for agriculture. There are approximately 89.0 acres of prime farmland located within the proposed yard site. The land would be lost for agricultural production through conversion to a rail yard.

Residential

There is no residential land present within the proposed yard site. No residences are located within 500 feet of the proposed yard.

Commercial

Approximately 1.3 acres of commercial property lies within the boundary of the proposed rail yard site. This land would be acquired by the railroad, and the business would be removed or relocated outside the proposed rail yard boundary. Impacts to other businesses in the area would include noise, dust, increased road traffic and vehicle delays associated with the movement of construction equipment and road closures on area roadways.

3.5.2.2.4 Water Resources

Surface Water

There are no streams located within the proposed rail yard site. Surface water impacts for the Waseca Yard would be similar to those described for Alternative B (Section 3.5.1.2.4).

Wetlands

There are no wetland areas present within the proposed rail yard site. However, approximately 39.0 acres of emergent wetlands are located approximately 200 feet north of the proposed rail yard site. Potential impacts to this wetland would be similar to those described for the Waseca Yard in Alternative B (Section 3.5.1.2.4).

Groundwater

Groundwater impacts for the Waseca Yard would be similar to those described for Alternative B (Section 3.5.1.2.4).

3.5.2.2.5 Air

The construction and operation of the Waseca Yard would increase local air emissions. During construction, approximately 95.0 acres of ground would be disturbed. Ground clearing and earth moving activities could contribute short term increases in fugitive dust and diesel emission from construction equipment, similar to those generated by agricultural activities. Air emissions associated with operation activities for this yard would be similar to those presented in Section 3.4.1.2.5, for the Waseca Yard under Alternative B.

3.5.2.2.6 Noise

There are no noise sensitive receptors located within 500 feet of this proposed rail yard site.

3.5.2.2.7 Biological Resources

Vegetation

Impacts to vegetation from construction and operation of the proposed Waseca Yard under Alternative C would be similar to those described for Alternative B, except that different amounts of vegetation would be impacted. This similarity is due to the sites being located in generally the same place as noted earlier. Approximately 93.2 acres of agricultural land would be affected by this proposed yard location. No other vegetative communities are located within the proposed yard boundary.

Wildlife

Impacts for the Waseca facilities would be similar to those described for the East Staging and Marshaling Yard (Section 3.4.1.1.7). Operational and construction impacts, as presented in Section 3.2.10, may include habitat loss, noise, train-wildlife collisions, disturbance from increased human presence and the potential introduction of contaminants into the environment. Noise disturbance would likely impact the wildlife communities in the yards surrounding area. Some species may find the area undesirable and move into adjacent areas.

3.5.2.2.8 Transportation and Safety

There are two roadways which cross the area proposed for the Alternative C, Waseca Yard. The ADT along these roadways is estimated to be 810 for County Highway 27 (Co Highway 27) and 55 for County Road 52 (Co Rd 52). It would be necessary to close and/or reroute these roads prior to crossing the existing DM&E rail line or entering the proposed rail yard. During construction and operation of the proposed yard, traffic would no longer have access through this area. Impacts associated with these road crossings of the existing rail line, such as vehicle delays and the opportunity for accidents, would no longer exist. Traffic rerouted to other roadways may impact the volume of road traffic and safety of other crossings and roadways. Potential vehicle delays and reduced access for emergency vehicles could occur. However, the low number of vehicles using these roadways would likely result in little change for other roadways. Construction traffic on local roads could cause additional traffic delays, wear on local roads, and increased safety concerns.

3.5.2.2.9 Socioeconomics

Socioeconomic impacts of the proposed Waseca Marshaling Yard would be similar to those described for Alternative B (Section 3.5.1.2.9), as construction and operation of this yard would occur in the same county and in generally the same location.

3.5.2.2.10 Hazardous Materials

Hazardous materials impacts for the proposed rail yard would be similar to those described for the new Waseca Marshaling Yard under Alternative B. No additional known potentially hazardous material sites would be impacted under the Alternative C, Waseca Yard location.

3.5.2.2.11 Cultural Resources

There are no known cultural resources or historic sites located within the proposed rail yard. A survey of the area would be necessary to determine if any sites are present. Any sites identified would be addressed according to the Programmatic Agreement (Appendix J).

3.5.2.3 Middle East Staging and Marshaling Yard

As under Alternative B, two options are proposed for the location of the Middle East Staging and Marshaling Yard (Middle East Yard) under Alternative C. Option A under Alternative C would only differ from Option A under Alternative B in the location and land use. Information on the location and land use for Option A under Alternative C is presented below. The remaining information for the Middle East Yard would be the same as discussed in Section 3.5.1.3. The location of Option B would be the same for both Alternative B and Alternative C. Therefore, construction and operation impacts would be the same. Tables 3.4-11 to 3.4-13 provide a summary of Option A. Tables 3.4-8 to 3.4-10 provide a summary of Option B.

3.5.2.3.1 Location

Under Alternative C, the Middle East Yard would begin approximately 4.0 miles west of Mankato, Minnesota and end at the eastern side of Judson, Minnesota. It would be located between mile posts 146.9 and 149.4 along the north side of the existing DM&E rail line. The proposed rail yard would extend approximately 2.5 miles, at a width of 400 feet. The area of the proposed yard site would be approximately 121.2 acres. The Middle East Yard would act as a staging yard for loaded and empty coal trains, a marshaling yard for grain, manifest and way freight traffic, would support interchange with the Union Pacific Railroad Company (UP) at Mankato, as well as providing a crew change point for all coal, manifest, grain and way freight trains.

3.5.2.3.2 Land Use

<u>Agriculture</u>

The area where the proposed rail yard would be built is rural and largely undeveloped. Approximately 12.6 acres of agricultural land, approximately 19.2 acres of woodland and approximately 88.4 acres of pasture and grassland were identified. Land would be lost for agricultural production through conversion to a rail yard.

Residential

There is approximately 1.0 acre of residential land within the proposed rail yard area. This includes one residence and several non-residential agricultural buildings. This land would be acquired by the railroad and converted to railroad use. Buildings would be removed or converted to railroad use. There are 17 residences located within 500 feet of the proposed rail yard boundary. Impacts during construction and operation would be similar to those discussed for the Middle East Staging and Marshaling Yard for Alternative B, Section 3.5.1.3.

Commercial

There is no commercial land within the proposed rail yard site.

3.5.2.3.3 Summary

The impacts of the new rail yards proposed in Minnesota for Alternative C are summarized in Tables 3.4-11 to 3.4-13.

Table 3.5-11
Land Use for Proposed Minnesota Rail Yards - Alternative C

Yard	Agricultural (Acres)	Residential (Acres)	Commercial (Acres)
East	152.0	0	0
Waseca	93.2	0	1.3
Middle East Option A	101.0	1.0	0
Middle East Option B	97.4	1.6	0

Table 3.5-12
Summary of Selected Impacts for Proposed Minnesota Rail Yards - Alternative C

Yards	Acres (approx.)	Prime Farmland	No. Of Streams	Acres of Wetlands	Noise Sensitive Receptors within 500 feet
East	152.7	94.0 acres	2	0	5
Waseca	94.5	89.0 acres	0	0	0
Middle East Option A	121.2	0 acres	5	3.7	17
Middle East Option B	111.5	109.4	1	14.2	12

Table 3.5-13
Roadways Impacted by Proposed Minnesota Rail Yards - Alternate C

Yard and Roadways	Location	ADT
East		
Twp 13	Mile Post 21.1	55
New Waseca		
Co Hwy 27	Mile Post 104.6	810
Co Rd 52	Mile Post 106.2	55
Middle East Option A		
Twp Hwy 461	Mile Post 147.2	100
Twp Hwy 231	Mile Post 148.9	52
Middle East Option B		
Twp 97	Mile Post 160.6	100

3.5.3 ALTERNATIVE D

3.5.3.1 Far East Staging and Marshaling Yards

The location and dimensions of this proposed yard would be the same as those described for the East Yard under Alternative B (Section 3.5.1.1.1). Construction and operational impacts would also be the same.

3.5.3.2 Waseca Marshaling Yard

The location and dimensions of this proposed yard would be the same as those described for this yard under Alternative B (Section 3.5 2.1). Construction and operation impacts would also be the same.

3.5.3.3 East Staging and Marshaling Yard

3.5.3.3.1 Location

Under Alternative D, the East Staging and Marshaling Yard[1] (East Yard) would begin approximately 0.25 mile west of Eagle Lake, Minnesota and end approximately 2.0 miles northeast of Mankato, Minnesota. The yard would be located between mile posts 123.0 and 126.6. It would be approximately 3.6 miles in length and 400 feet in width. The area of the rail yard would be approximately 174.5 acres. The Middle East Yard would act as a staging yard for loaded and empty coal trains, a marshaling yard for grain, manifest and way freight traffic, would support interchange with the Union Pacific Railroad Company (UP) at Mankato, as well as providing a crew change point for all coal, manifest, grain and way freight trains.

3.5.3.3.2 Geology and Soils

The proposed Alternative D, East Yard would be constructed in an area containing glacial till and organic material with an underlying material of friable loam. The dominant soil types in the area of the proposed rail yard are Cordova and Le Sueur clay loams. Slopes generally range from 0 to 3 percent with average top soil depths of 9 to 13 inches. Erosion potential is low because of the low gradient and short slopes. In their natural state, Cordova soils range from moderately well-suited to poorly-suited to most crops. If adequately drained, they are well-suited for most crops. Cordova soil is poorly-suited to most urban and recreational use because of the seasonal high water table. Le Sueur soils are well-suited to all general farm crops. They have fair to poor potential for most urban uses because of the moderate shrink-swell potential, low strength, and seasonal wetness. Impacts during construction could include compaction of the surface layer, destroying suitability of soil for crop growth, by making the soil hard and cloddy. Soils would be graded and covered with rail lines, gravel, concrete and asphalt. Approximately 61.7 acres of prime farmland would be converted to a rail yard facility. During operation, drainage may be required to prevent flooding.

[1] This yard would correspond to the Middle East Staging and Marshaling Yard listed in Alternatives B and C.

3.5.3.3.3 Land Use

Agriculture

The proposed yard site is primarily agricultural. Land within the proposed rail yard site includes approximately 9.8 acres of woodlands, approximately 14.6 acres of pasture or grasslands and approximately 136.6 acres of cropland. There are approximately 61.7 acres of prime farmland located within the proposed rail yard. Woodlands would be cleared during construction and land used for crops and pasture would be lost for agricultural production.

Residential

Approximately 1.2 acres of residential land, upon which two residences are located, are within the proposed rail yard. This land would be acquired by the railroad and converted to use as a railroad facility. Buildings would be removed or converted for railroad use. There are 6 residences located within 500 feet of the proposed rail yard site. Impacts to these residences would include noise, dust, blocked crossings, vehicle delays and increased road traffic associated with the movement of construction equipment and road closures on area roadways. These impacts would be temporary, during the several month construction period for the proposed rail yard.

Commercial

Approximately 1.7 acres of commercial property, containing one business, lies within the proposed rail yard boundary. This land would be acquired by the railroad and converted to use as a rail yard. Buildings would be removed or converted to railroad use. Businesses and industries located in areas adjacent to the proposed rail yard would experience noise, dust, increased road traffic and vehicle delays associated with the movement of construction equipment and road closures on area roadways.

3.5.3.3.4 Water Resources

Surface

Two intermittent streams pass through within the proposed rail yard site. These streams would require realignment or channelization. Impacts to surface water, as described in Section 3.2.7.1, could include an increase in water velocity due to channelization and stream bank stabilization, leading to scouring and erosion of streams, and potential contamination from hazardous substances washing from the yard site during rain fall events. Changes in the ground cover created by the presence of the proposed rail yard could alter surface drainage to adjacent waterways.

Wetlands

Approximately 10.5 acres of wetlands are located within the proposed rail yard. Approximately 8.7 acres are classified as emergent and approximately 1.8 acres are forested wetlands. These wetlands would likely be lost or significantly altered during rail yard construction. Potential impacts would include draining, filling, and change in flow of surface water. Impacts to adjacent wetlands are discussed in Section 3.2.7.2 and could include increased sedimentation and changes in hydrology that could impact wetland vegetation.

Groundwater

The soils in this area are characterized by a high water table. Possible contamination could result from a spill of hazardous substances during construction or operation of the proposed rail yard. During operation of the proposed yard, small spills of fuel and lubricants could accumulate over time, resulting in impacts to groundwater. Spills are unlikely due to expected reduction in derailments and compliance with regulatory procedures for handling, storing and disposing of potential contaminants.

3.5.3.3.5 Air

Impacts resulting from the construction and operation of the East Staging & Marshaling Yard under Alternative D would be similar to those presented in Section 3.5.1.3.5, for the Middle East Yard under Alternatives A and B. Table 3.5-14 presents the amount of emissions from locomotive activity in the Alternative D East Yard under the 20 MNT, 50 MNT, and 100 MNT operating level scenarios.

Table 3.5-14
Emission Levels of Proposed East Staging & Marshaling Yard

Operating Level	HC		CO		NO_x		SO_2		PM_{10}		Pb	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
20 MNT (11 trains per day)	1.57	6.58	4.27	17.93	22.34	93.83	2.77	11.62	1.07	4.48	8.67E-05	0.00036412
50 MNT (21 trains per day)	2.99	12.57	8.15	34.22	42.65	179.13	5.28	22.19	2.04	8.56	1.66E-04	0.00069514
100 MNT (37 trains per day)	5.27	22.14	14.36	60.30	75.15	315.61	9.31	39.10	3.59	15.07	2.92E-04	0.00122477

HC - Hydrocarbons
SO_2 - Sulfur Dioxide
CO - Carbon Monoxide
NO_X - Oxides of Nitrogen
PM_{10} - Particulate Matter (less than 10 microns in diameter)
Pb - Lead
tpy- tons per year

3.5.3.3.6 Noise

Noise impacts from construction and operation of this proposed yard facility would be similar to those discussed for other proposed rail yards. There are 6 noise sensitive receptors located within 500 feet of the proposed rail yard (Table 3.5-15). These receptors would potentially experience increased noise levels from construction and operation of this rail yard as discussed in Section 3.5.1.3.6.

Table 3.5-15
Noise Sensitive Receptors Located within 500 Feet of Proposed East Staging and Marshaling Yard for Alternative D

Distance from Rail Yard	Location	Number of Noise Sensitive Receptors
0 -100 feet	north of proposed rail yard	1
101- 200 feet	-	0
201- 400 feet	1 - north of proposed rail yard 2 - south of proposed rail yard	3
401- 500 feet	1 - north of proposed rail yard 1 - south of proposed rail yard	2

3.5.3.3.7 Biological Resources

Vegetation

Construction activities associated with the development of the proposed yard facilities could cause temporary and permanent impacts to vegetation. The conversion of approximately 136.6 acres of cropland to a rail yard facility could cause the loss of crops, if planted prior to construction. Cropland would no longer be available for crop production. Approximately 9.8 acres of woodlands, including 1.8 acres of forested wetlands, and approximately 14.6 acres of pasture or grassland, including 8.7 acres of emergent wetlands, would likely be cleared, disturbed, or lost during construction. Adjacent vegetation could also be affected during construction and operation. Impacts could include soil disturbance, clearing and potential spills of hazardous substances that could affect vegetation or soil properties in adjacent areas. Vegetative communities may also be impacted by the introduction of non-native or non-desirable species in buffer areas where vegetation and surface soils are disturbed, as discussed in Section 3.2.10.1.

Wildlife

Wildlife habitat within the proposed rail yard would include 136.6 acres of agricultural land, 9.8 acres of woodlands, 14.6 acres of grassland or pasture and 10.5 acres of wetlands. Wildlife impacts during construction and operation would be similar to those discussed for the Middle East Yard under Alternative B (Section 3.5.1.3.7).

3.5.3.3.8 Transportation and Safety

There are five roadways which pass through the proposed yard site, as noted in Table 3.5-16. The ADT for these roadways is also presented in this table. Highway 14 is a four lane divided highway with a present grade separation of the existing DM&E rail line. Construction of this proposed rail yard would possibly require an extension of the grade separation bridges. Temporary delays and rerouting of traffic during construction would occur. In addition, Highway 12 would likely require the installation of a grade separation based upon its ADT (3,750 vehicles per day).

Roadways that cross the proposed rail yard location would be closed and rerouted prior to crossing the existing DM&E rail line or entering the proposed rail yard. During construction and operation of the proposed yard, traffic would no longer have access through this area. Impacts associated with these road crossings, such as vehicle delays and the opportunity for accidents due to rail traffic, would no longer exist at these crossings. Potential vehicle delays and reduced access for emergency vehicles could occur due to construction activities, redirected traffic on area roadways, or increased road and rail traffic on roadways with grade crossings. Traffic rerouted to other roadways could increase the volume of road traffic on those roads, leading to safety concerns at other crossings and roadways. Construction traffic on local roads could cause additional traffic delays, wear on local roads, and increased safety concerns.

3.5.3.3.9 Socioeconomics

Since the proposed yard in Blue Earth County is similar to that described for the Middle East Yard, Alterative B, Option A, socioeconomic impacts for this proposed rail yard would be similar to those described for Alternative B (Section 3.5.1.3.9).

3.5.3.3.10 Hazardous Materials

Impacts to hazardous materials would be similar to those described for the Middle East Yard, Alternative B, Option A, in Section 3.5.1.3.10.

3.5.3.3.11 Cultural Resources

There are no known cultural resources or historic sites located within the proposed rail yard. A survey of the area would be necessary to determine if any sites are present. Any sites identified would be addressed according to the PA (Appendix J).

3.5.3.3.12 Summary

The impacts of the new rail yards proposed in Minnesota for Alternative D are summarized below in Tables 3.4-16 to 3.4-18.

Table 3.5-16
Land Use for Proposed Minnesota Rail Yards - Alternative D

Yard	Agricultural (Acres)	Residential (Acres)	Commercial (Acres)
Far East	152.0	0	0
Waseca	78.7	0	0
East	151.2	1.2	1.7

Table 3.5-17
Summary of Selected Impacts for Proposed Minnesota Rail Yards -Alternative D

Yards	Acres (approx.)	Prime Farmland	No. Of Streams	Acres of Wetlands	Noise Sensitive Receptors within 500 feet
Far East	152.7	94.0 acres	2	0	5
Waseca	80.0	74.0 acres	0	0	0
East	174.5	61.7 acres	2	10.5	6

Table 3.5-18
Roadways Impacted by Proposed Minnesota Rail Yards- Alternate D

Yard and Roadways	Location	Average Daily Traffic
Far East		
Twp 13	Mile Post 21.1	55
Waseca		
Co Rd 52	Mile Post 106.2	55
East		
US Hwy 14	Mile Post 123.4	Grade separation
Co Hwy 3	Mile Post 124.1	320
Co Hwy 3	Mile Post 124.6	200
Co Hwy 12	Mile Post 125.3	55
Co Hwy 12	Mile Post 126.1	3,750

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